The Economic Effects of Local Purchasing Preferences: A Case Study of Computer Systems West In Lane County

By

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Executive Summary

Selective purchasing is a policy by a government to discriminate their purchases against certain companies based on their political, social, environmental, or geographical attributes. As mail order and online purchases rise, there is increased competition for many local community businesses, and this may lead local governments to discriminate in favor of local businesses. In fact, ten US states (and many more local communities and cities) have enacted local bidding preference laws (www.earthrights.org). These laws, covering a range of different products and services, give anywhere from a 3-10% bidding preference to companies located within that particular state or community. The stated intention of such policies is to generate greater local spending and jobs. However, economists worry that such policies can divert purchases to less-efficient suppliers, and ultimately lower local spending and employment.

This study examines this issue both from a general perspective and through a case study of a local computer manufacturer in Eugene: Computer Systems West (CSW). The study is composed of three parts. The first part conducts a detailed analysis of the spending and employment effects for Lane County from diverting local purchases to CSW. Increasing spending for a local company leads to what economists call a "multiplier" effect of spending and employment for a local community. The initial spending on CSW will lead to local wages paid and local purchases of other inputs. This puts money into local hands, a fraction of which is spent locally, and the process continues through many iterations. We collected data from CSW to calculate the firm's local and non-local expenditures, enabling estimation of a more specific multiplier for their company. After analyzing CSW's expenditures, we found that approximately 31% of their total expenditures stayed in Lane County in the form of wages, rent, taxes, local input purchases, etc. With this data and input from a well-known regional multiplier model, we were able to estimate a multiplier of 1.76 for CSW and an employment multiplier of 2.40.

Given these multipliers, we are then able to estimate the local impacts of purchasing from CSW. We find that for every $1000 purchase from CSW an additional $546 in local spending is created. This comes mainly from wages paid to local employees who then spend some of their earnings locally, which generates more local spending, etc. For each additional new job created at CSW, another 1.4 jobs is created in the local economy. An alternative way to express these impacts is by considering the diversion of enough local spending to CSW to allow the firm to double its operations. This change in local spending on CSW computers would lead to an additional $1.36 million in local spending in Lane County. Similarly, assuming constant returns to scale, a doubling of CSW's operations would also lead to an increase of 14 full-time equivalent employees at CSW, and an additional 19.6 full-time equivalent jobs elsewhere in Lane County.

The positive effects to the local economy from an increase in local spending on computer products could come with associated costs. The second part of our study provides analysis of perceived tradeoffs by purchasers of computers in Eugene. After interviewing customers of both CSW and online computer companies, such as Dell Computers, we found certain tradeoffs purchasers face when making their purchasing decisions. Purchasers tended to choose national online firms over CSW because of perceived lower prices, brand recognition, and convenience of ordering. Some agencies chose CSW over online firms for special orders and because of CSW's proximity and responsive service.

Given the information from our interviews, the final section of our study considers a thought experiment of the potential impacts on Lane County should it adopt a 5% local

purchasing preference law for computer purchases. The first scenario assumes that computers from CSW and online firms are identical in every dimension, but local purchasers are generally uninformed about the local purchasing option: CSW. In this scenario, implementation of the law would see local purchasers voluntarily switch their purchasers from online firms to CSW with no additional cost to these purchasers. This scenario would generate all the benefits to the local economy discussed in part 1 of the study, without any local costs.

The next scenario we considered is that the adoption of the 5% preference law in computers would lead to no one switching their purchases to CSW. For example, this would occur if CSW is not competitive even within the 5% range for standard orders of computers, but currently operates because it is competitive in filling special orders. With no switches, there would be no associated benefits or costs to Lane County.

The final scenario is that the law forces some purchasers to switch their purchases to CSW, experiencing a concomitant price increase. The local purchasers' total costs would rise, making them charge higher prices to their downstream consumers. This would lead to a decrease in the purchasers' demand and production, with spending cutbacks and layoffs for local purchasers of electronic computers. The direct impact is a simple transfer from Lane County purchasers of computers to CSW (and other local producers of computers). This would suggest that the gains to CSW calculated in section 1 would be largely offset by losses by the purchasers. However, the losses may be more substantial since a switch to an inefficient local producer means the increased spending goes more into production costs than profits. In this way, the losses to the purchasers from paying higher prices could outweigh the gains to the local producers.

1. Introduction

As mail order and online purchases are on the rise, there is increased competition for many local community businesses. Companies like Wal-Mart are entering small towns all over the country, and many small local businesses are losing money, or even shutting their doors. To counteract these problems ten states have enacted local bidding preference laws (www.earthrights.org). Selective purchasing is a decision by the governments to avoid buying from certain companies based on their political, social, environmental, or in this case, geographical attributes. These laws, covering a range of different products and services, give anywhere from a 3-10% bidding preference to companies located within that particular state.[1]

[1] One example of selective purchasing based on social criteria is The Massachusetts Burma Law. It was modeled after the South African anti-Apartheid selective purchasing laws adopted by 25 states in the 1980's. "The Massachusetts Burma Law provides a 10% preference for bids from companies that avoid doing business in Burma unless the preference would impair essential purchases or result in inadequate competition" (www.earthrights.org). This law was passed in 1996, three months before Congress authorized federal sanctions against Burma.

To counteract selective purchasing laws within the United States, twenty-nine state governments are now using reciprocal preference laws. "Oregon's reciprocal preference law requires public contracting agencies, in determining the lowest responsible bidder, to add a percent increase to each out-of-state bidder's bid price which is equal to the percent of preference given to local bidders in the bidder's home state. That is, if the low bidder is from a state that grants a 10 percent preference to its own in-state bidders, the Oregon agency must add 10 percent to that bidder's price when evaluating the bid"(Dept. of Admin. Services). Selective purchasing and reciprocal laws are now just going back and forth at each other. Reciprocal preference laws are essentially costs that accompany selective purchasing preferences. Another form of purchasing law is the tie-bid or vendor preference law. This law states that if an in-state firm ties for the lowest bid with an out-of-state firm, the in-state firm will win the bid. Many states have passed this law, but its effects are most likely not as great as the selective purchasing. Table 1 shows all fifty states, and which states are using reciprocal preference and tie-bid laws.

Many feel that a local purchasing preference will generate more money within the state through direct and indirect effects. A multiplier effect will result in increased economic activity through more jobs, tax revenues and local expenditures. This may be the case, but there is also a cost to local purchasing laws. If firms are required to purchase from in-state agencies, they may not be buying from the most efficient source. This will raise their overall total costs, which may be passed through to the consumer, diluting the positive effects of the multiplier.

TABLE 1: Reciprocal Laws and Tie-Bid Preference Laws in the U.S.

State	Reciprocal Law	Tie-Bid Preference	Date Revised	State	Reciprocal Law	Tie-Bid Preference	Date Revised
Alabama (AL)	No	Yes	3/ 2003	Montana (MT)	Yes	No	3/ 2003
Alaska (AK)	No	No	3/ 2003	Nebraska (NE)	No	Yes	3/ 2003
Arizona (AZ)	No	No	3/ 2003	Nevada (NV)	No	Yes	3/ 2003
Arkansas (AR)	No	No	5/ 2002	New Hampshire (NH)	No	No	1/ 2001
California (CA)	No	Yes	3/ 2003	New Jersey (NJ)	Yes	No	5/ 2002
Colorado (CO)	Yes	Yes	3/ 2003	New Mexico (NM)	No	Yes	5/ 2002
Connecticut (CT)	No	Yes	1/ 2001	New York (NY)	Yes	Yes	5/ 2002
Delaware (DE)	No	No	3/ 2003	North Carolina (NC)	Yes	Yes	3/ 2003
Florida (FL)	Yes	Yes	3/ 2003	North Dakota (ND)	Yes	Yes	3/ 2003
Georgia (GA)	Yes	Yes	3/ 2003	Ohio (OH)	Yes	No	1/ 2001

Hawaii (HI)	Yes	Yes	3/ 2003	Oklahoma (OK)	Yes	No	3/ 2003
Idaho (ID)	Yes	Yes	3/ 2003	Oregon (OR)	Yes	Yes	3/ 2003
Illinois (IL)	Yes	Yes	5/ 2002	Pennsylvania (PA)	Yes	Yes	5/ 2002
Indiana (IN)	Yes	No	3/ 2003	Rhode Island (RI)	No	Yes	3/ 2003
Iowa (IA)	Yes	N/A	3/ 2003	South Carolina (SC)	No	Yes	5/ 2002
Kansas (KS)	Yes	Yes	5/ 2002	South Dakota (SD)	Yes	Yes	3/ 2003
Kentucky (KY)	No	Yes	5/ 2002	Tennessee (TN)	Yes	Yes	3/ 2003
Louisiana (LA)	Yes	Yes	3/ 2003	Texas (TX)	Yes	Yes	3/ 2003
Maine (ME)	Yes	Yes	3/ 2003	Utah (UT)	Yes	Yes	5/ 2002
Maryland (MD)	Yes	Yes	1/ 2001	Vermont (VT)	No	Yes	5/ 2002
Massachusetts (MA)	No	Yes	1/ 2001	Virginia (VA)	Yes	Yes	5/ 2002
Michigan (MI)	Yes	Yes	1/ 2001	Washington (WA)	Yes	No	3/ 2003
Minnesota (MN)	Yes	No	3/ 2003	West Virginia (WV)	Yes	No	1/ 2001
Mississippi (MS)	Yes	Yes	1/ 2001	Wisconsin (WI)	Yes	No	5/ 2002
Missouri (MO)	Yes	Yes	1/ 2001	Wyoming (WY)	No	Yes	5/ 2002

Notes: Data collected from the Department of Administrative Services of the State of Oregon.

Our study examines both the positive and negative effects of local versus out-of-state purchasing from both the business and state perspective. The benefits to the local economy come from increased revenues, which create greater expenditures from both the businesses and consumers. This can lead to higher levels of employment, and increased tax revenues. But the costs to society also have to be considered. These laws can bring higher total costs to downstream businesses and consumers, which leads to less disposable income, cutbacks on spending, and job losses. Another cost to regions are the reciprocal laws that are counteracting local purchasing. Though the reciprocal preference laws are not always costs. If all states adopted reciprocal preference laws it would lead to elimination of local purchasing laws, which may be a good thing. Together these laws create inefficiencies in the markets and promote less competition between states. The cost side of the study can be difficult to quantify, but they still must be accounted for.

Local businesses, state agencies, and consumers can benefit from our research because they will know the benefits and costs of local purchasing and can use it to base their decisions about similar problems in various economies, policies, and markets. Already ten states have passed purchasing laws without a detailed economic study to examine what the full impacts are

on their local economy. From our research Oregon businesses and citizens will have a greater understanding of the costs and benefits of such proposals.

Our study is both a general analysis and a specific case study involving selective purchasing. We focus on Computer Systems West for a hypothetical situation of what would happen if Oregon decided to pass a local purchasing law. We collected data from Computer Systems West to calculate local and non-local expenditures and from there we were able to get a more specific multiplier for their company. We also were able to use a "generic" multiplier for computer equipment in Lane County. The multipliers give us two different effects for the same industry and allow us to compare and contrast the two. CSW feels that their main competitor is Dell Computers, so we also evaluated the pros and cons of using both companies. We spoke to both existing customers of Computer Systems West as well as potential clients to evaluate the trade offs of using the two companies. We spoke to mostly state agencies, which are involved in state pricing agreements with various computer companies. This allowed us to examine how costly it would be if a purchasing law were implemented.

After analyzing CSW's expenditures and grouping them into local and non-local, we found that approximately 31% of their total expenditures stayed in Lane County in the form of wages, rent, taxes, etc. The CSW multiplier was estimated to be 1.45, significantly lower than the generic multiplier (2.02) from the IMPLAN model. In the IMPLAN model, value added is 31% of total expenditure and 26% was allocated to locally purchased intermediate inputs, making local expenditures equal to 58%. Whereas, we calculated CSW to have a value added multiplier of 31% and locally purchased intermediate inputs close to 0%, making local expenditures equal to 31%. Because of the discrepancy of the locally purchased intermediate goods in the IMPLAN model, we decided to adjust the multipliers generated by the IMPLAN model. As the difference between the two multipliers came from the intermediate inputs, we subtracted 0.26 from 2.02 and got 1.76. This is our adjusted multiplier that we will use for the computer industry in Lane County.

Given this multiplier, a doubling of operations from, say $2.5 million to $5 million, would lead to an additional $1.36 million in local spending in Lane County. Similarly, we can adjust the employment SAM multiplier by 13% to give us a new employment multiplier of 2.4. Assuming constant returns to scale, a doubling of operations would also lead to more than twice

as many full-time positions (CSW has 14 full-time employees). Therefore, 33.6 additional full-time equivalent jobs would be created in Lane County if operations doubled.

The positive effects to the local economy from an increase in local spending on computer products could come with associated costs. After interviewing customers of both Computer Systems West and Dell Computers, we found certain tradeoffs they face when making purchasing decisions. Purchasers tended to choose Dell over CSW because of lower prices, brand recognition, and convenience of ordering. Some agencies chose CSW over Dell for special orders and because of their great location and service. Speaking to these purchasers gave us a better idea of why they chose one company over another.

We also discuss three possible scenarios from implementing a 5% local purchasing preference law for computers in Lane County. The first scenario would be if the law was implemented and purchasers voluntarily switched their purchasers from Dell to CSW. It may be the case that purchasers were previously unaware of CSW's products. Once they discover them (because of the 5% law) they voluntarily change their purchases. This scenario would generate all the benefits to the local economy, without the potential costs.

The next scenario from the 5% preference law in computers would be that no one would switch their purchasing. This may be because CSW is only fulfilling special orders, and their prices are not competitive enough for standard orders. In this case there would be no associated benefits or costs to Lane County.

The final scenario would be that some purchasers are forced to change their purchases to CSW, now paying a higher price. In this case we assume that CSW's revenues would double from the increased spending. The purchasers' total costs would rise, making them charge higher prices to their downstream consumers. This would lead to a decrease in demand, decrease in production, spending cutbacks, and layoffs. In this case there is a simple transfer from consumers to producers, with no net benefit or cost. However, it also causes purchases to switch to an inefficient local producer, causing an efficiency loss. These negative impacts would dilute the benefits added by the increased spending on computer equipment.

2. Literature Review

A great deal of research has been done in the area of purchasing preferences when it comes to domestic versus foreign firms. One study done by Fernando Branco (1994) considers the "rationale for giving preference to domestic firms in the award of government contracts when the regulator is interested in maximizing domestic welfare". He finds that when there are no comparative advantages for either firm, that the regulator should favor the domestic firm to increase domestic welfare. This applies to our study in the sense of state versus federal. Out-of-state firm's profits won't increase in-state welfare directly, but through federal programs and funding we will get other indirect benefits. He also goes on to discuss that in his examples neither firm has cost advantages, while in our study this is not the case. But Branco's conclusions are good baselines to start from, i.e., assuming no cost difference initially. Various states across the US have adopted local preference laws which favor domestic firms to an out-of-state firm if it the bidding price is within a certain range, say 5%. In reaction to such preference laws, twenty-nine states have enacted reciprocal preference laws. In Oregon, the lowest out-of-state bidder will get an additional percentage increase equal to the amount of preference it gets in its particular state, and then is reassessed with other local firms.

In response to the continuous growth of electronic commerce a number of papers have examined the social, as well as economic effects of online purchasing opportunities on the local economy. Austan Goolsbee (2001) has done a study comparing the competition in the computer industry: online versus retail. He examines how much competition online companies create for local merchants, and estimates the "price sensitivity of individuals choice of whether to buy online versus in retail stores". This is useful for our study, because it will help to show the impact on Computer Systems West if Dell has lower prices. Goolsbee goes on to find that the "variation in retail prices has a significant impact on the likelihood of buying directly from the manufacturer". If local purchasing laws were put into place, all else equal, organizations would be buying more from companies like Computer Systems West because the prices would then be essentially equalized. Goolsbee also found that "conditional on buying a computer, the elasticity of buying remotely with respect to retail store prices is about 1.5". This means that if retail prices increase by one percent, then people purchase 1.5 percent more from an online market,

ceteris peribus. The main focus of this study was on consumers, while our focus is on government and state-funded agencies, which would be more effected by local purchasing laws.

Charles Steinfield and Pamela Whitten (1999) focus on the differences between online businesses and local businesses, and the comparative advantages that the online businesses may have. According to their study, they found that online business had a comparative advantage over their local counterparts. The main advantages found were 1) lower sunk costs due to the lack of building or rental space, 2) better economies of scale achieved from a larger customer base and thus volume discounts on inputs, 3) flexibility of setting up facilities in proximity of factors of production, 4) lower costs as a result of bypassing intermediaries in retail distribution, 5) cheaper labor costs and more efficient service, 6) ability to access distant markets anytime. They also found that these factors create social costs to the local economy, such as decreases in employment, decreases in convenience due to fewer local businesses, loss of local goods and of uniqueness of community, and reduced collectible tax from businesses causing government funds to go down. In addition, they also speculated that local businesses could increase their productivity by complementing their physical businesses with virtual stores. These observations are important for our study. If the advantages of online businesses creates overall lower total costs to the firm, and in turn the consumers, we will need to examine the direct and indirect effects of an increase in costs to consumers if local purchasing laws were enacted. If the direct and indirect effects as a result of increase in price are positively correlated to consumption, then online businesses are likely the most efficient source. Therefore, a local purchasing law could have adverse effects on consumers. Evaluating the effects of online versus local purchases involves understanding how local benefits accrue from local purchases; this is where we use economic multipliers.

A good source for direct and indirect multiplier effects is the Regional Multipliers Handbook for input-output modeling system. It helps in deciding what information is necessary in order to effectively use the multipliers for analysis. They can then be used to estimate the impact of a proposed project on local earnings, output and employment. The "final-demand multipliers for output are the basic multipliers from which all the others are derived"(Daley, Ehrlich, Landefeld, 1997), they show the change in output that results from a $1 change in demand for final goods and services. Using this we can then estimate the effects on wages and employment levels. We can use these multipliers to help determine the effects of increased local

business activity if a purchasing law was passed. The generic multiplier for Lane County computer purchasing was calculated in this way. Most of the handbook focuses on changes within a given community, such as a business opening or closing, so we will mainly use the input-output multiplier method from NASDA that is described below.

In order to calculate the economic impact of local businesses in the community, we will refer to National Association of State Development Agencies (NASDA) report prepared for the U.S. Department of Commerce (1999). NASDA addressed this problem by using an input-output analysis, where buyers and suppliers of the industry were traced. This model was able to estimate 1) the direct impact on the industry that could possibly become part of the firms supplier base, 2) the indirect effects of new income generated by the new employees in the area, and 3) the induced effects caused by increased amounts in spending money for the firms and individuals of the local economy. We will use similar methodology in quantifying the different types of multipliers that may arise as a result of shifting from online retailing to local purchasing preferences, by surveying people that have used CSW's services, and those that chose an alternative supplier, as well as by examining CSW's financial statements. CSW's financials will give us insight into how much of their expenditures stay within the state, and how much "leaks out" through non-local purchasing. This information will help us estimate the benefit-side of the study. From the data collected of the survey questions we will be able to determine how much of their total costs are due to computer expenses, and how much of an affect a local purchasing preference would have on their total cost, which would help in estimating the cost-side of the study.

3. Analysis

3.1. Empirical Methodology

"Benefit-cost analysis is really a framework for comparing the pros (benefits) and cons (costs) of project choices"(Gramlich, Edward M., 9). Our study is meant to be a guideline to help policy makers, businesses, and consumers in local economic decision-making. The first part of the analysis quantifies the benefits that directly result to the local economy by examining the expenditures of Computer Systems West to determine what percentage of their total expenses go back into the local economy, in the form of wages paid to workers, contracts with local suppliers,

profits gained by owner, utility bills, state income taxes, and so forth. While some of this money ultimately "leaks out" of the state, much of it will remain in circulation in the local economy, increasing economic activity statewide. From this information we are able to estimate the percentage amount of total expenses that CSW incurs that goes back into the economy and estimate an individual multiplier for CSW. This allows us to quantify the benefits reaped by the local community as a result of purchasing from CSW. The second part of the analysis deals with estimating the cost-side of the study. In order to discuss possible tradeoffs that may occur as a result of purchasing computers from local retailers instead of online businesses, we surveyed different firms that chose CSW over Dell and vice-versa. From their responses we found that the majority of computers were purchased from Dell. Some of the local businesses that we talked to did not even know about CSW. So there is a possibility that local businesses and state agencies would purchase from CSW rather than Dell, provided they knew CSW existed and that prices and quality were equal. Most of current purchases from CSW were for special orders that were harder to order online; these costs were about 5% to 10% of their total costs allocated for electronic computers. Thus, most firms said that they would continue to purchase from CSW even if the price rose, by say 5%, because special orders were only a small portion of their total budget. In the next section, we talk about a hypothetical situation where there is a 5% local purchasing preference law on computers in the state of Oregon, and how that would effect the price elasticity of demand for computers and how pricier computers would effect consumption of other goods, by reducing the amount of disposable income that could be spent on them, which in turn would reduce the overall local benefit.

We will divide our study into three sections. The first section will deal with the benefits received, and the details of how we got the generic multiplier for electronic computers in Lane County and how we sorted CSW's financial data into non-local and local to calculate the firm's individual multiplier. The second part of the study will discuss the possible tradeoffs that many purchasers face when making their computer purchasing decisions. The third section deals with the effects caused by a hypothetical situation where a 5% local purchasing law exists on electronic computers in Lane County.

3.2. Estimation of Benefits to the Local Community from CSW

In this section we discuss the details of how we calculated the generic multiplier for electronic computers in Lane County and how we sorted CSW's financial data into non-local and local expenditures, to calculate the firm's individual multiplier. We were able to get an estimate of a generic multiplier for electronic goods in Lane County using the Impact Planning (IMPLAN) Model from Bruce Sorte at Oregon State University. The IMPLAN model is similar to the input-output model used in the NASDA report, as previously discussed. The model was able to produce multipliers for the direct, indirect, and induced impacts that the computer industry generates in Lane County for the year 2000. The calculated estimate for an employment SAM multiplier was 2.77 and for a total value added SAM multiplier was 2.02. The SAM multiplier incorporates all three impacts[2]. It is calculated by taking the sum of the three impacts and dividing it by the direct effects to give an overall total multiplier. This means that for every one million dollar increase in the computer industry, approximately three jobs are created in the county. And, for every $1 spent on electronic computers the local economy gets benefits of $2.02. The IMPLAN model also provided the total local production, imports into, and exports out of Lane County for the computer industry, that were $1.604 million, $16.657 million, and $0.254 million respectively. Furthermore, the IMPLAN model gave us an estimate of the portion of total local production that was value added, which was equal to $0.521 million. From this data we are able to calculate value added as a portion of total output value for the computer industry, which is about 32%. Also, from the IMPLAN model we found out that 58% was local expenditures. This implies that the locally purchased intermediate inputs were 26% (58-32%) of the total expenditures.

While interpreting the results we should take into considerations that the IMPLAN model, as every model does, has limitations that may effect our estimations. The limitations being: 1) prices are constant, 2) individual firms are aggregate, 3) the production possibilities frontier is linear and homogeneous, 4) the coefficients of production per dollar output are constant, i.e., constant returns to scale and no technology changes, 5) intermediate production

[2] The actual dollar amount that goes into the local community in the form of wages, property taxes, rent, etc are the direct impacts. The individual spending that occurs from wages being paid out to employees and rent being collected are indirect effects, whereas the induced effects occur when local businesses benefit from additional customers. In this way, money circulates in the local economy making it actually greater than the amount that was first put in directly by the CSW. All of these impacts are calculated in the SAM multiplier.

requirements from other local industries remain constant, and 6) supply is unconstrained. For instance, the IMPLAN model is not able to capture the flexibility of the people, nor does it account for technology advancements as it assumes constant prices and constant returns to scale. The model also assumes an unlimited supply of goods and a linear and homogeneous production possibilities frontier, which is generally a non-linear function (bowed out) because resources are not able to adapt perfectly. Although the IMPLAN model has its limitations it still provides us with a good estimate of the multiplier effects for Lane County.

As the IMPLAN model treats all of the firms in the same industry as a single aggregate firm, by calculating CSW's individual multiplier we will obtain a more accurate representation of the multiplier of a typical computer firm. In order to calculate the individual multiplier for CSW, we used CSW's Income Statements for the years 2001 and 2002. Unlike the IMPLAN model that calculated aggregate multipliers for electronic computers in Lane County, we divided CSW's operating expenses, cost of goods sold and profits into two sections: local and non-local, based on whether the expenses stayed in-state or leaked out-of-state.

The local section contains expenses that would directly go back into the local economy, i.e. in the state of Oregon, for example, wages, rent, utilities, property taxes, etc. Whereas the non-local section contained expenses CSW incurred that leaked out of the local economy, for example, cost of goods sold that were manufactured in other states besides Oregon, etc. Some of the items such as employee benefits, non-inventory purchases, etc, were hard to place in either section. For those items we assumed a certain percentage stayed in state whereas the rest leaks out. With the employee benefits we assumed that 20% of the expenses leaked out of state in the form of administrative cost portion of health insurance, Medicare, Workman's Compensation, FUTA and SUTA, whereas the remaining 80% stayed in the local economy as people tend to go to hospitals around their vicinity. Most of CSW's inventory and non-inventory items- hardware, software and other accessories- come from distributors in California, whereas about 10% come from in-state manufacturers such as Intel and Hewlett Packard. Hence, we allocated 90% of those expenses as non-local and the remaining as local. Other items that were hard to trace back to either one source, and weren't very significant in terms of percentage of expenditures, were allocated to being local, such as office supplies, travel expenses, etc. Advertising was one of the more significant operating expenses, and since CSW did most of their advertising via radio we

put the whole value as a local expense even though there is possibility of leakage, as headquarters to those stations are in other states.

TABLE 2: Computer Systems West Expenses for 2001-2002

Expenses	Year 2001			Year 2002		
	% of Total Expenses	% Local	% Non-Local	% of Total Expenses	% Local	% Non-Local
Cost of Goods Sold	0.72	0.04	0.68	0.70	0.02	0.68
Employee Benefits	0.03	0.02	0.01	0.03	0.02	0.01
Wages	0.16	0.16		0.19	0.19	
Rent & Utilities	0.02	0.02		0.02	0.02	
Office Expenses	0.06	0.06		0.06	0.06	
Taxes	0.00	0.00		0.00	0.00	
Net Income	0.01	0.01		0.01	0.01	
Total	1.00	0.31	0.69	1.00	0.31	0.69

Table 2 gives a brief summary of local and non-local estimates for the main expenses that occurred in 2001 and 2002. After calculating both the local and non-local expenditures we found out that the average percentage amount of CSW's expenditures that were local was about 31% and the remaining being non-local. A more detailed version of Table 2 is given in Table 3 in the appendices section. In that table, expenditures are first divided into two categories: local and non-local, and again sub-divided into groups such as- cost of goods sold, wages, employee benefits, etc. All expenditures are individually accounted for, under groups, and are compared as a percentage of total expenses of their respective years. Similar to Table 2, expenditure ratios are calculated by adding the individual proportions on each side for each year. Then the average of the yearly ratios are taken and were estimated to be 31% local and 69% non-local. In order to calculate the individual multiplier for CSW we took the reciprocal of the difference between 1 and .31, which is approximately equal to 1.45.

We should note here that our local estimate for CSW (31%) and the value added estimate from the IMPLAN model (32%) is very close. The discrepancy between the two models is with the percentage of locally purchased intermediate inputs. The IMPLAN model attributes 26% of the total expenditures to intermediate inputs, whereas our calculations suggest those values being close to zero. Also, the IMPLAN model multiplier of 2.02 implies that more than 50% of the total expenditures are local at every step. In comparison to our case study of CSW this estimate seems rather high, considering that cost of goods sold was about 70% of the total expenditures, out of which more than 90% were non-local purchases. Though there maybe a possibility that

CSW may not be a typical firm representing most of Lane County's electronic computer retailers, the chances of computer retailers getting more than 50% of their total expenses locally is slim, since Oregon does not have many hardware and software manufacturers.

Because of the discrepancy between the two models, we adjusted the IMPLAN model multiplier of 2.02 by .26, making our adjusted multiplier equal to 1.76. Here, we have assumed that our first-round estimates from CSW are correct, i.e., the direct effects from CSW to Lane County are approximately 31%. In the next steps in the multiplier we use IMPLAN's estimates of the indirect and induced effects, which are approximately equal to 50%. Similarly, we adjusted the employment SAM multiplier given by the IMPLAN model. As the discrepancy of 0.26 was approximately equal to 13% of the value added SAM multiplier (2.02), we adjusted the employment multiplier (2.77) by 13% to 2.4. We should also note that after further analyzing of CSW"s financials we realized that yearly revenue is approximately $2.5 million, whereas the IMPLAN model, as mentioned earlier, noted that the total local production of electronic computers in Lane County was $1.064 million. Despite this underestimate of the total local production in Lane County by the IMPLAN model we will assume that the indirect and direct effects produced from the IMPLAN model are correct.

With multiplier estimates in hand, we can now think about how increases in spending will affect the local economy. We find that for every $1000 purchase from CSW an additional $546 in local spending is created. This comes mainly from wages paid to local employees who then spend some of their earnings locally, which generates more local spending, etc. For each additional new job created at CSW, another 1.4 jobs are created in the local economy. As a thought experiment, suppose local purchases were to increase such that CSW could double its operations from $2.5 million to $5 million. This means that an additional $775,000 (31% of $2.5 million) would directly be fed back into the local economy. The actual additional benefit would be greater than that due to the multiplier effect, and would equal to $775,000 times the multiplier of 1.76. This is approximately equal to $1.36 million. Assuming constant returns to scale, a doubling of operations would also lead to more than twice the number of jobs being created in Lane County (CSW has 14 full-time employees). Therefore, 33.6 (14 times 2.4) additional full-time equivalent jobs would be created if operations doubled.

3.3. Tradeoffs for Lane County Business Purchasers of Computers: Anecdotal Evidence

As discussed in the previous section, local purchasing laws have benefits to the local economy through multiplier effects. But, we have found that with these benefits of local purchases come associated tradeoffs. To try and evaluate the tradeoffs, we surveyed businesses and state agencies that use Computer Systems West, as well as those who purchase from Dell Computers. Through these surveys we were able to get a better understanding of why agencies make certain choices regarding the differences between online and retail markets. Our focus was mainly on purchasers from state agencies, because they are the ones who would most likely be affected by the local purchasing law.

Purchasing from online or mail order has great advantages for these state agencies. They are able to buy from the most efficient sources, get the lowest prices, and are able to do it all from their computer. Lane County only produces $1.604 million of computer equipment, $0.254 million of which is exported, while importing $16.657 million worth. Lane County is spending $18.007 million dollars on electronic computer equipment annually, but only producing 8.9% of it. We have tried to get a sense of why purchasers are going outside of Lane County for their computer needs.

After speaking to businesses we found a few reasons why they chose Dell Computers or Computer Systems West. One of the reasons for choosing Dell involves brand recognition. Knowing a brand name makes purchasers feel more comfortable about their computer purchase decisions. If the company has a good reputation it can make businesses feel like they are getting the best equipment. Buying a clone or generic brand can give the feeling of lesser quality. Another reason for choosing Dell is because of convenience. Purchasers can place orders from their computer and have them delivered to their door in a short time. This ease of ordering gives them more time for other tasks.

Another problem facing purchasers, that they are unaware of, may be a lack of information. After interviewing one local purchaser we found that CSW and other local firms may not be very widely known. If consumers in Lane County were more informed about CSW and their products, they may choose to buy from them versus Dell. CSW's products could be perfect substitutes with identical prices, and if purchasers don't know about them, it makes no difference.

Some agencies chose Computer Systems West for their purchases because of their proximity and service. They felt the reliability of the machines was equal, and the service department was excellent. Because Computer Systems West is located in Lane County the technicians are able to serve customers needs right away. Another reason for using Computer Systems West is for special purchases. One purchaser we interviewed orders all of their special purchases from CSW. In this way, CSW is servicing a niche market. They can fulfill unusual orders like special hard drives or other systems that may not be for general office use. The location, service and specialty factors give Computer Systems West an advantage over Dell, while the widely recognized brand name, and convenience give Dell an advantage.

Another major factor driving purchasing decisions is pricing. As discussed by Steinfield and Whitten (1999), online firms enjoy many cost advantages. The main advantages found were 1) lower sunk costs due to the lack of building or rental space, 2) better economies of scale achieved from a larger customer base and thus volume discounts on inputs, 3) flexibility of setting up facilities in proximity of factors of production, 4) lower costs as a result of bypassing intermediaries in retail distribution, 5) cheaper labor costs and more efficient service, 6) ability to access distant markets anytime. Because of their comparative advantage Dell is able to be offer great prices to its state purchasers. One way these discounts are achieved is through pricing agreements. We found that all state agencies in Oregon are required to take part in various price agreement contracts through different computer companies. They can choose from a variety of companies including Dell and Hewlett Packard, based on their needs and the prices. One pricing contract involving fifteen Western states is the Western State Contracting Alliance (WSCA). This cooperative purchasing agreement allows member's city, county, education and state entities to combine their purchasing power in a single contract. Combining all of these agents together gives them huge amounts of purchasing power, which affects demand, and in turn prices. Because of the huge volume being purchased, these states are able to get significant discounts on their computer equipment. It is still undetermined whether Computer Systems West is able to bid for these pricing agreements, or whether it is only a privilege for larger competitors.

3.4. Thought Experiment: If Lane County Adopted a 5% Local Purchasing Preference in the Computer Industry

Previously we discussed the benefits local economies would enjoy because of a purchasing law. As stated, ten states have enacted local purchasing preference laws that give a 5-10% bidding preference to those firms located within the particular state. In this section we consider hypothetical scenarios that show the potential costs that may offset the local benefits if a purchasing preference law was adopted in Lane County. This law would force state agencies to buy from an in-state firm if their price is within a 5% range of the lowest bid. We will illustrate three different scenarios affecting state agencies if the 5% preference law were put into place.[3]

The first scenario involves a lack of information. As previously discussed, CSW and other local firms may not be widely known in Lane County. This may be one of the reasons agencies are choosing to purchase from Dell or other big name computer brands. If a 5% purchasing law were passed in Lane County, local purchasers would gain knowledge of which local suppliers exist in Lane County. Once they were aware of CSW and their products, they may switch their purchases voluntarily, without being forced by the purchasing law. This is the best-case scenario for the purchasing law. Lane County would enjoy all the benefits generated by the multiplier effect because of increased local spending, without the potential costs.[4]

If a selective purchasing law were adopted in Lane County, it would be unrealistic to assume that all purchases would then be local. Not all local firms would be competitive enough to compete with out-of-state businesses, even with a 5% purchasing preference. The second possible scenario would be that no purchasing changes would be made. This may be realistic if local firms are only providing special order computers, and are not competitive for standard orders. All state agencies would maintain their current purchasing habits. If in-state firms cannot get within the 5% range of the lowest bid, then purchasers wouldn't have to change their purchases at all. In this case, there would be no associated costs and no associated benefits to the law.

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[3] We are only considering state agencies, because they are the most likely ones to be affected by the local purchasing law.

[4] There are short run costs of switching to an unfamiliar computer; people have to become acquainted with new systems and hardware. These would be only temporary but should be considered.

The next possible scenario for the 5% selective purchasing law would be that some purchasers would then have to purchase their computer equipment from in-state firms. In this hypothetical situation we are going to assume that because of these purchases, Computer Systems West's yearly revenue would double from $2.5 million to $5 million annually. If Computer Systems West's prices were 5% more for all these customers, this would raise their customer's total costs. This increase would also have an identical multiplier effect on the cost side. Since the state agencies' costs would rise, they may have to charge higher prices to their consumers. From the law of demand, higher prices mean a decrease in demand for the goods and services. When quantity demanded decreases, firms will have to decrease their production. This could lead to spending cutbacks and employee lay offs. From all of these economic changes, consumer spending will decrease. All of these effects would be felt throughout the county and would trickle down to consumers. Standard economic analysis would suggest that the 5% price increase would be a simple transfer from consumers to producers, with no net benefit or cost. However, it also causes purchases to switch to inefficient local producers, causing an efficiency loss.

Another issue that faces firms when considering preference laws is capacity. If local firms were within the 5% range and purchasers increased their in-state purchases, Lane County firms would likely have difficulty accommodating the demand to supply our county with computer equipment. If Computer Systems West doubled their revenue, they would have to either move into new office space, or build a new facility.[5] So, we must also consider if the law is plausible in terms of our capability of supplying our state with the necessary computers. In the long run, with the 5% purchasing law in place, existing firms may expand their business, while others may enter. However, the entering firms may not be competing with online or out-of-state firms, only with the other local firms that have the advantage of the 5% preference law. This would be creating more efficiency losses from increased purchasing from a less efficient source.

[5] If a new facility were built it would create benefits in the short run in the form of construction costs. If they used an in-state construction company this would create short-term jobs and would have a multiplier effect through out the local economy.

4. Conclusion

With the growing number of e-commerce and mail order businesses, many communities and states across the country are lobbying for local bidding preferences, maybe without knowing the true long-term economic effects. Our study examines the potential benefits and costs if a local preference law was enacted in Lane County. Because of the local preference laws being put into place, 29 states are now passing reciprocal preference laws, which essentially counteract each other. Through the cost benefit analysis we have examined the multiplier affects caused by increased local spending, as well as the potential efficiency losses from the possibility of increased costs to downstream customers. We examined the expenditures of Computer Systems West to create a case specific multiplier for their firm, we then compared it with the model set up by IMPLAN, to get an accurate representation of a value added multiplier for electronic computer equipment in Lane County. We analyzed Computer Systems West's expenses for 2001-2002, deciding which expenditures were local and which leaked out to places other than Lane County. We calculated that 31% of CSW's expenditures stay in Lane County in the form of wages, rent, property taxes, etc. We adjusted the value added SAM multiplier and the employment multiplier to 1.76 and 2.4, from the original estimates of 2.02 and 2.77 after comparing the aggregate multipliers from the IMPLAN model to our case study of CSW. We estimated that if CSW's operations were to double from $2.5 million to $5 million, it would create an additional $1.36 million of local spending in Lane County. Assuming that doubling of operations implies at least twice as many employees would be hired, i.e., constant returns to scale, 33.6 more jobs would also be created in Lane County.

Along with benefits of purchasing locally come the potential costs. We discuss the potential costs to downstream consumers in various situations, as well as the tradeoffs that purchasers face when making computer purchase decisions. We consider three plausible situations if a 5% purchasing law in computers were implemented in Lane County. The first scenario being that because purchasers learn of CSW and their products, they switch their purchases voluntarily, without having to be forced by the 5% preference law. In this case all of the benefits generated by the multipliers would be enjoyed, without the potential costs. The next scenario would be that no purchasers have to change their purchasing habits because local firms' prices do not reach the 5% range. This may be because they are only fulfilling special computer

orders, and aren't competitive for standard orders. The final scenario would be that some firms would have to switch their purchases to a local firm, and they may experience some added costs because of it. The major costs are higher prices to consumers, decreases in demand, spending cutbacks, and layoffs. All of which will have a negative effect on the local economy, and would dilute the benefits added by the increased spending on computer equipment.

With our research, consumers, businesses and state agencies will hopefully be better informed of the economic impacts of the bidding preference laws, or at least the industry factors that make it more beneficial (less costly) to the local community that adopts these laws. There is still a substantial amount of research that can be done in this area. In the future we would hope to be able to quantify the potential costs to Lane County from the 5% preference law, so the overall net benefits or costs would be more apparent. It would also be interesting to analyze the 10 states that have passed local purchasing laws, to see the impacts it has had on their local economies.

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