

**Prepared Statement of R. Preston McAfee**

**West Coast Gasoline Prices**

**Before the  
Committee on Commerce, Science and Transportation  
Subcommittee on Consumer Affairs, Foreign Commerce, and Tourism  
United States Senate**

**April 25, 2001**

## **Introduction**

Mr. Chairman and members of the Committee, my name is R. Preston McAfee. I am Murray S. Johnson Professor of Economics and former Chair of the Department of Economics at the University of Texas at Austin, and Visiting Professor of Strategy at the University of Chicago Graduate School of Business.<sup>1</sup> In 1999 and 2000, I was retained by the Federal Trade Commission ("FTC") to provide expert economic analysis and potential testimony in connection with the FTC's investigations of the mergers of Exxon Corporation (Exxon) and Mobil Corporation (Mobil) and of British Petroleum PLC (BP) and the Atlantic Richfield Company (ARCO). In addition, I provided assistance to the FTC in its investigation of last summer's price increase in the Midwest. I am pleased to be here today to discuss the economic issues that I researched, as they pertain to your examination of West Coast gasoline prices in general and Oregon in particular.<sup>2</sup>

As part of my studies of the two mergers, I had access to and studied a substantial amount of information, including the documents that the FTC had gathered in the course of its investigations. I am advised that much of this information was provided to the FTC under statutory authority that generally requires the FTC to keep the information submitted to it confidential,<sup>3</sup> and, except to the extent that information has independently been made public, I am not at liberty to disclose today information submitted to the FTC pursuant to confidentiality restrictions.

However, as the Committee is aware, the U.S. District Court for the Northern District of California has ordered the release of some of the documents filed under seal in *FTC v. BP Amoco*, and I understand that I am at liberty to discuss those documents. In addition, some of the information I examined as part of my analysis was obtained from public sources.

## **Exxon Mobil**

One of the major focuses of my Exxon Mobil investigation was the West Coast refining and retailing markets, where Exxon and Mobil had been the fifth and sixth largest firms. Six firms, including Chevron, ARCO, Equilon, and Tosco refined over 90 percent of all California Air Resources Board (CARB) gasoline. There has not been a new refinery built on the West Coast, or anywhere else in the United States for that matter, for decades, and there was no prospect of new entry into the market in the foreseeable horizon. Older refineries that have been moth-balled, such as the Powerine refinery in Southern California, could theoretically be returned to the market to produce conventional gasoline, but they would face extraordinary and probably prohibitive costs in upgrading to produce a significant quantity of CARB.

Furthermore, it is very expensive to ship refined products to the West Coast from the nearest major refining center,<sup>4</sup> the Gulf Coast, in part because of the Jones Act requirements that such shipments be made on U.S. built, owned, and crewed vessels, but also because of

---

<sup>1</sup> I attach a copy of my curriculum vita for the Committee's reference.

<sup>2</sup> I have not made any study of gasoline prices in Oregon beyond what I have done in preparing for this testimony and my knowledge of the subject is necessarily limited.

<sup>3</sup> I was authorized to receive FTC confidential information as a consultant to the FTC, and I gave the FTC written assurances that I would not disclose confidential information that I received from the FTC.

<sup>4</sup> It is estimated to cost 8 to 12 cents, *Oxy Fuel News*, September 6, 1999. The Jones Act accounts for about four cents per gallon in added shipping costs.

size restrictions in the Panama Canal as well as its costs, and the lack of a gasoline pipeline alternative. Moreover, even provided a company succeeded in bringing CARB gasoline from the Gulf Coast or the Caribbean, it is not trivial to get the gasoline to consumers. In particular, transporting gasoline to consumers requires terminaling facilities and retailing facilities, which are in large part controlled by incumbent refiners. Thus, it is unlikely that imports of CARB gasoline will enhance West Coast supply at current, or even moderately higher, prices.

Demand for gasoline is highly inelastic, meaning that small reductions in supply that are not offset by other increases can lead to significant price increases. Thus, even quite modest levels of market power may translate into significant producer margins. Inelastic demand exacerbates concerns about any enhancement of market power.

For these reasons, it is my opinion that the FTC was right to be concerned about the increase in market concentration that the Exxon Mobil merger would have caused on the West Coast. I believe that the Commission was right to require the divestiture of the Exxon refinery in Benecia, California as a condition for approval of the merger.

## **BP-ARCO**

The combination of BP and ARCO would have meant that a single company would have dominated oil exploration and production in Alaska. This domination would likely have given the combined company a great deal of monopsony power in the purchase and development of oil leases on the North Slope of Alaska. (Monopsony power is power for buyers corresponding to monopoly power for sellers.) This power covers negotiations with Federal and state authorities as well as other producers that depend on BP and ARCO infrastructure.

BP and ARCO were the two largest firms in bidding for exploration leases in Alaska, in exploring for oil in Alaska, in producing oil in Alaska, in transporting oil from the North Slope of Alaska to the port of Valdez via the Trans-Alaska Pipeline, and in shipping Alaskan oil to refineries on the West Coast. From 1989 to 1999, ARCO and BP were first and second respectively in dollar value of bids made and bids won for Northern Lease Area auctions held by Alaska and the Federal government. During that 10-year period, the two firms submitted 85% of the winning bids, won 70% of all leases sold, drilled 90% of the wells, ran 10 of 11 operatorships, and produced 74% of the crude oil.<sup>5</sup> BP and ARCO owned 72% of the Trans-Alaska Pipeline and 70% of the tankers in the Alaska trade.

Absent the divestiture ordered by the FTC, the merger would have eliminated the competition BP faced from ARCO to find and produce ANS crude oil. This reduction in competition would have reduced revenues on the oil, and might have led to a reduction in exploration and development in Alaska. Economic theory makes a strong presumption that a monopsonist would have been likely to eliminate some investments in oil production that likely would be made in a more competitive environment.<sup>6</sup> Primarily for this reason, I believe the FTC was justified in imposing a requirement that BP divest itself of most or all of ARCO's Alaskan properties as a precondition for the merger. The sale of all the stock in the ARCO Alaska company to Phillips Petroleum gave me great confidence that the merger would not harm competition on the North Slope.

---

<sup>5</sup> Exxon, the next largest producer in Alaska, had essentially dropped out of bidding and exploring. While Exxon had made 276 bids (winning 123) from 1959 to 1982, it made only 13 bids from 1989 to 1999, winning 2. It appears that Exxon has taken a "harvest" strategy with respect to Alaska.

<sup>6</sup> The risk of this happening was much greater at the time the merger was announced than it would be now, because of the large increase in world crude oil prices.

A second issue that arose in the BP ARCO merger was BP's efforts to raise price on the West Coast through price discrimination, including most prominently the sale of some oil in the Far East, but also differences in prices charged to refiners on the basis of their willingness to pay.<sup>7</sup> While this issue has received a great deal of publicity, and was important to the evaluation of the merger, it was a very minor factor in determining West Coast gasoline prices: at the most a penny per gallon and probably less than half that.<sup>8</sup> FTC Commissioners Anthony, Swindle, and Leary have also stated that they believe that half a cent is the upper bound.<sup>9</sup> The desire of BP to export even with net earnings on exports (the "netback") lower than those prevailing on sales to the West Coast was important for the analysis of the proposed merger, even if it ultimately had little to do with West Coast gasoline prices. BP's price discrimination demonstrates that BP's marginal value of ANS was lower than ARCO's, because ARCO's marginal value was typically determined by transactions at or near the spot price. Thus, the merged entity could inherit BP's lower value for oil, which would lead to reduced efforts to explore and develop ANS. BP's perception that it faced a downward sloping demand exacerbates concerns about the increased concentration in Alaska.

ANS represents less than half of all the crude used in West Coast refineries, so a reasonable estimate is that the typical refinery might have experienced one quarter of a cent price per gallon increase because of the exports. Some of that price increase may have been absorbed by firms rather than passed on to consumers, so the impact of the exports on

---

<sup>7</sup> BP described the means by which it sets the prices as follows: "By building computer models of each major WC refinery and our knowledge of product and import crude prices, we can approximate the required ANS price to displace the foreign imports for each refinery. Integrating the individual refinery models together along with transportation costs into a single ANS model, allows determination of the optimum ANS price and geographic disposition that maximizes BP's overall ANS revenues. As exports are allowed, Far East sales will replace Gulf Coast, Virgin Island and Mid-continent placements. The model will be modified to take into account the Far East refineries." [PX 425, BPA-ORG 003830]

<sup>8</sup> This estimate comes from BP's optimizer model, which was used by its traders as a tool for making export decisions. This model indicated in some months that for every 10 thousand barrels per day the company exported, it would be able to raise the price of Alaska North Slope crude oil (ANS) by perhaps a tenth of a cent per gallon, or 4 cents per barrel. Because sales to Asia would raise the spot price on the West Coast, and therefore BP's price to all consumers who had contracts tied to that spot price, BP was willing to export oil to Asia even when the profit margins on such sales were smaller than what could have been earned on the West Coast. While BP's exports are not a matter of public record, total exports from the region have averaged 50 to 60 thousand barrels per day since 1996 and 74 mbd in 1999. Therefore a rough estimate would be that BP's exports raised the price of ANS by about half a cent per gallon at the refinery level. Prior to 1996 there was a ban on exports abroad, although oil was shipped to the Gulf. Not all of BP's exports were at net prices below what could have been earned on the West Coast. At times when West Coast supply was high relative to demand, for example when a refinery was shut down, there were no buyers in California willing to pay as much as the export price (less a transport discount). Public data source: Petroleum Supply Annual, Table 13; Petroleum Supply Monthly, Table 25.

<sup>9</sup> "Statement of Commissioners Anthony, Swindle, and Leary in BP Amoco/ARCO, File No. 991-0192, Docket No. C-3938", footnote 3: "We have reason to believe that the upward price effects of these sporadic sales amounted to no more than one-half cent per gallon at the pump."

consumer prices was probably even lower.<sup>10</sup> I do not know if BP was able to earn the margins suggested in their theoretical Optimizer model.

That the maximum amount that BP could leverage prices in the US West Coast is small is also guaranteed from the existence of substitutes. There are good substitutes for ANS available, although at somewhat higher transportation and logistics costs. These substitutes insure that the maximum possible price variations that could be sustained are modest. In addition, BP's ability to export is constrained by the availability of shipping. Few ships meet Valdez requirements and existing ships are being retired. It is implausible that new ships would be built for the purpose of exports, and thus BP's ability to restrict sales to the West Coast was diminishing even absent the merger. Exports to the Far East essentially ended in May, 2000.

Exports serve a potentially useful role in promoting exploration. A very large discovery or a sequence of medium discoveries in Alaska could produce more than the West Coast can absorb at world prices; in this happy circumstance basic economic theory suggests that our nation is better off selling oil at high prices rather than consuming at artificially low prices. BP's modest attempt at increasing West Coast oil prices in the recent past does not economically justify a return to the export ban. The nation prospers by exporting resources and other goods and services for high market prices, not consuming internally at lower prices, and the primary effect of the export ban was to reduce the value of Alaskan exploration and production, by reducing the options available to explorers.

BP also discriminated among targeted West Coast refineries, charging what BP estimated the refinery was willing to pay. This discrimination presumably was done to raise BP's profits, but it is unclear whether the effect on consumer prices was to increase them or lower them.<sup>11</sup> In any event the overall effect on gasoline prices of BP's discrimination was probably very small, and might have even contributed to lowering the prices.<sup>12</sup> It would be important for the refineries themselves, of course.

The divestiture of ARCO's Alaska assets to Phillips has preserved existing competition in Alaska – Phillips should become a strong competitor to BP in the same way that ARCO was. Moreover, the incentive of BP to export in order to increase West Coast prices is mitigated or eliminated by the terms of the merger. The acquisition of ARCO's West Coast refining assets substantially reduces the value of increased West Coast oil prices to the combined entity. Overall, the divestitures required by the FTC have definitely preserved and likely enhanced competition to supply Alaskan oil to the West Coast.

---

<sup>10</sup> GAO, "Alaska North Slope Oil: Limited Effects of Lifting Export Ban on Oil and Shipping Industries and Consumers," Report No. RCED-99-191 (July 1999). The GAO report states: "Despite higher crude costs for some refiners, no observed increases occurred in West Coast consumer prices as a result of lifting the export ban." *Id.* at 8. However, this issue is complicated by the fact that increased ANS prices might increase prices of California crudes.

<sup>11</sup> Price discrimination can either increase or decrease total output – that is, the effect of price discrimination to the West Coast may have been to increase the total sales of oil, which would have reduced gasoline prices overall. BP had an incentive to keep inefficient refineries in business as consumers of oil, and thus may have offered lower prices to refineries that would otherwise shut down. However, BP's pricing could discourage refinery investment. The main importance of price discrimination for the merger is its evidence of market power, and thus an increased concern in bidding, exploration and production, rather than its direct impact on gasoline consumers.

<sup>12</sup> Price discrimination involves reducing prices to some refineries while increasing prices to others, so the average price increase even at the refinery level would be much less than the difference between the average and lowest prices charged.

## Other Factors Influencing Current West Coast Prices

If not exports, then, what does account for the higher prices in places like California and Oregon? As noted above, exports account for only a small portion of the higher West Coast prices. I claim no special expertise relative to many other economists in answering this question: I have not performed the sort of detailed analysis required for the Exxon-Mobil and BP-ARCO mergers. However, there are a number of causes, besides OPEC, that are uncontroversial among economists. The California Energy Commission breaks down prices every week. For the 52 weeks ended April 16, 2001 the prices for branded gasoline broke down in the following way<sup>13</sup>:

Gasoline Cost Breakdown	
Dealer Cost and Profit Margin	\$.07
Crude Oil Cost	.66
Other Refining Costs and Profit Margin	.48
State and Local Taxes <sup>14</sup>	.31
Federal Taxes	.24
Total Retail Price	\$1.76

Increases in crude oil costs, which averaged about 30 cents a gallon in 1998 when crude prices were \$12-13 per barrel, is the single largest contributor to the recent price increases. I will focus my comments on the Refiner Cost and Profit margin, which usually though not always is higher on the West Coast than it is elsewhere in the country.<sup>15</sup>

First, CARB gasoline costs refiners an additional 3-4 cents per gallon in marginal production costs to manufacture, after producers have incurred the fixed expense of upgrading

---

<sup>13</sup> See California Energy Commission, "Estimated 2000 Gasoline Price Breakdown and Margin Details" and "Estimated 2001 Gasoline Price Breakdown and Margin Details", available at [www.energy.ca.gov](http://www.energy.ca.gov). Dealer Cost and Profit Margin includes all costs associated with the distribution and retailing of motor fuel, including but not limited to: franchise fees, and/or rents, wages, utilities, supplies, equipment maintenance, environmental fees, licenses, permitting fees, credit card fees, insurance, depreciation, advertising and profit. Dealer Margin normally lags changes in the wholesale price of gasoline. Refinery Cost and Profit Margin must cover all costs associated with production, distribution, and acquisition of gasoline. The Refinery Margin covers all costs associated with refining and terminal operation, crude oil processing, oxygenate additives, product shipment and storage, oil spill fees, depreciation, brand advertising, purchases of gasoline to cover refinery shortages and profits. The CEC acknowledges that the refiner margin estimates may not equal actual margins.

<sup>14</sup> State excise taxes in Oregon are 24 cents, to which must be added 1.5 to 3 cents per gallon for local taxes (3 cents in Portland). Steve Sou, "Taxes help state prices float near top of nation", *The Oregonian*, February 24, 1999.

<sup>15</sup> In Oregon, for example, refiner sales of conventional gasoline for resale were at prices that were about 9 cents above the national average in December 2000 and 4 cents below the national average in January 2001, the last two months for which data is available. (Petroleum Marketing Monthly, April 2001, table 35.)

their refineries to make them capable of producing reformulated gasoline.<sup>16</sup>

Second, in addition to the higher marginal costs West Coast refiners incurred around \$3 billion in fixed costs to be able to produce CARB. These expenses would not be incurred unless higher retail prices justify the expenditures, and consequently we should expect these costs to be reflected in the average price of CARB gasoline. The cost of upgrading was enough to cause some smaller refiners to shut down, thereby reducing California refining capacity.<sup>17</sup> Furthermore, because CARB gasoline gets 1 to 3 percent less miles per gallon than conventional gasoline, the switch to CARB likely caused California consumers to demand more gasoline just to go the same distance.<sup>18</sup> The combination of higher demand and lower supply would be expected to lead to higher prices as a matter of basic economics. These higher prices in part compensate the suppliers for large expenditures in refinery upgrades.

As there are no refineries in Oregon, Oregonians must compete for the gasoline from the same refineries that supply California and Washington. That is why a shortage of CARB gasoline that leads to a price increase in California should lead to a similar price increase in Oregon, even though Oregonians usually consume conventional gasoline.<sup>19</sup> The wholesale price of conventional gasoline in Oregon, which was, on average, about eight cents higher than in the rest of the country<sup>20</sup> in 2000, reflects the shortage of refining capacity on the West Coast.

The most significant gasoline problem facing the West Coast is the lack of new refineries. The West Coast market, which largely operates separately from the rest of the country in terms of gasoline production, has a relatively small number of large firms. The fact that the industry is so stable, with no entry and the small number of firms, creates an oligopoly rather than a perfectly competitive market. This oligopoly is reinforced by concentration by the

---

<sup>16</sup> A 1999 Energy Information Administration (EIA) report on Phase II reformulated gasoline (RFG) regulations estimated that the Phase II RFG standard would increase costs by approximately 3.5 to 4 cents per gallon over the cost of conventional gasoline. (California's CARB standard is even more stringent than Phase II RFG.) Although that report did not directly estimate the cost of the CARB standard, the EIA observed that the actual wholesale price difference between CARB and conventional gasoline was 4.2 cents per gallon between January 1997 and December 1998. See Tancred Lidderdale and Aileen Bohn, EIA, "Demand and Price Outlook for Phase 2 Reformulated Gasoline, 2000" (Aug. 6, 1999), [www.eia.doe.gov/emeu/steo/pub/special/rfg4.html](http://www.eia.doe.gov/emeu/steo/pub/special/rfg4.html).

<sup>17</sup> During the 1990s four smaller refineries in California shut down: Golden West and Fletcher in 1992 and Pacific Refining and Powerine in 1995. In addition, Paramount Refining continues to produce conventional gasoline but has not upgraded to produce CARB. See Leffler, Keith and Barry Pulliam. "Preliminary Report to the Attorney General Regarding California Gasoline Prices," November 22, 1999, p.8.

<sup>18</sup> See California Air Resources Board press release, "Fuel-Economy Reduction From Cleaner-Burning Gas Within Expected Range, According To Statistics", October 10, 1996.

<sup>19</sup> During the summer months, the Portland area uses an oxygenated, low-Reid Vapor Pressure (RVP) gasoline, which contains some of the same blending components employed in the production of California's CARB gasoline. This low-RVP product is not as expensive as CARB but costs more than conventional gasoline. The Klamath Falls area also requires a low-RVP gasoline in the summer, which would be less expensive than Portland gasoline but more expensive than the conventional gasoline used elsewhere.

<sup>20</sup> See Energy Information Administration, Petroleum Marketing Monthly, Table 31, various issues. The retail price includes full service in Oregon, but in the rest of the country, only about 10% of customers opt for full service. In January 2001, the latest month available, the rack price in Oregon was 5.5 cents below the national average. The rack price is a wholesale price at the terminal.

same firms at the terminaling and retail stages of production. Concentration of production facilities was a key reason for requiring a divestiture of a refinery in the Exxon and Mobil mergers.<sup>21</sup> Oligopolies may charge prices above competitive levels without explicitly coordinating or colluding, by following their individual interests.<sup>22</sup>

Fourth, it is expensive to ship refined products to the West Coast. While there are serious logistical problems associated with bringing gasoline to the West Coast, the threat of imports exerts some pressure on West Coast gasoline prices. These costs are increased by the Jones Act, which increases transportation costs by around four cents per gallon.

The tight supply situation on the West Coast, combined with the expense of shipping into the region, means that supply disruptions are likely to lead to price increases. A fifth major factor in the high prices that Oregonians paid in 2000 was the rupture of the Olympic pipeline, which is normally the main source of gasoline in Oregon.<sup>23</sup> The pipeline ruptured in Bellingham, Washington, on June 10, 1999, and remained closed for shipments from BP's Cherry Point refinery and Tosco's Ferndale refinery throughout the remainder of 1999 and all of 2000. Gasoline shipments did not resume until February 3, 2001, and operations on the Olympic system will be limited to 80 percent of capacity until sometime in 2002.<sup>24</sup> Inelastic demand insures that modest supply disruptions have a significant impact on prices.

The pipeline shutdown required the four main Puget Sound refineries to ship gasoline to Oregon via barge, which increased costs by about 2 cents per gallon<sup>25</sup> or more. In addition to refinery production problems, at least one refinery, the ARCO (now BP) refinery at Cherry Point, Washington, was forced to reduce production as a result of logistical constraints that arose out of the Olympic Pipeline break.<sup>26</sup>

Oregon is one of only two states (with New Jersey) to ban self-service gasoline sales. Nationally, about 90 percent of all consumers choose self-serve. The Oregon law means that consumers are forced to buy gasoline bundled with some services that are costly to produce. One estimate by an FTC economist implies that the self-serve ban adds about 3.5 cents to average prices in Oregon.<sup>27</sup> This calculation is consistent with Oregon's higher than average

---

<sup>21</sup> Since 1990 California refining capacity has fallen by about 9 percent while capacity in the rest of the country has risen by about 11 percent. See Petroleum Supply Annual, Table 38.

<sup>22</sup> While antitrust authorities can prevent further consolidation of the West Coast refineries, they are not in a position to encourage or promote new entry of refineries.

<sup>23</sup> The Olympic Pipeline is a 400-mile system running from Ferndale, Washington to Portland, Oregon, that connects the four main Puget Sound refineries.

<sup>24</sup> Overall shipments on the Olympic Pipeline in 1999 were 25 percent below 1998 levels, while overall shipments in 2000 were more than 45 percent below 1998. As for gasoline and jet fuel, 1999 shipments were 27 percent below 1998 levels, while shipments in 2000 were 26 percent below the levels of 1998. Olympic Pipeline Company, FERC Form 6, 1998-2000.

<sup>25</sup> Kim Christensen and James Long, "Lack of competition holds Oregon hostage at the pump," The Oregonian (Aug. 29, 1999), <[www.oregonlive.com/news/99/08/st082901.html](http://www.oregonlive.com/news/99/08/st082901.html)> (quoting an employee of a barge company to the effect that shipping by barge should cost around 2 cents per gallon more than shipping via pipeline).

<sup>26</sup> Atlantic Richfield Company S.E.C. report 10k for 1999, pp. 9-10.

<sup>27</sup> Michael G. Vita, "Regulatory Restrictions on Vertical Integration and Control: The Competitive Impact of Gasoline Divorcement Policies," 18:3 J. Regulatory Econ. 217 (2000). In areas that permit self-service stations, sales through full-service pumps represent only about 10 percent of all gasoline sales.



retailing costs and margins as reported by the Energy Information Administration.<sup>28</sup>

Many of these factors that lead to higher prices reflect the public policy choices of government officials whose concerns are not limited to the price of gasoline, but include clean air, land use, and other factors. It should not be surprising that cleaner-burning, lower pollution gasoline, regulations on refineries, zoning rules limiting entry, and laws designed to protect maritime and gasoline station jobs will lead to higher consumer prices. I have not performed any analysis of the benefits of these governmental policies, nor their overall costs.

## Conclusion

The main points I would make before this committee are:

- The West Coast gasoline market is integrated: supply and demand events in California, Oregon and Washington affect all three states.
- West Coast gasoline refining is concentrated in the hands of a small number of firms.
- Inelastic demand for gasoline implies that modest supply disruptions have significant impacts on prices.
- The divestitures obtained in the Exxon-Mobil merger insured that competition by refineries and retailers was maintained.
- The merger of BP and ARCO, absent the divestiture, would have reduced competition for bidding, exploration and development of oil resources in Alaska.
- The divestiture of ARCO's Alaskan assets to Phillips preserves competition for oil bidding, exploration and development in Alaska.
- BP exercised monopoly power in the sale of oil to refineries, evidenced by price discrimination, which requires monopoly power.
- BP's attempts to increase West Coast oil prices had a very small impact of West Coast gasoline prices, and manipulation of oil prices does not account for the extent to which West Coast prices are higher than in other parts of the country.
- The divestiture of ARCO's Alaska assets reduces or eliminates BP's potential profits from increasing West Coast oil prices. Thus, it is unlikely that BP-ARCO will attempt to increase West Coast prices by exporting.
- Major factors that have recently increased Oregon prices include
  - Increased world oil prices
  - Growing West Coast demand
  - Reduced West Coast supply due to CARB requirements
  - The absence of new refineries<sup>29</sup>
  - The isolation of the West Coast market

---

<sup>28</sup>See for example, the EIA's Petroleum Marketing Monthly for April 2001, Table 31. The difference between the pre-tax prices for "sales to end users" and "sales for resale" are typically several cents per gallon higher in Oregon than they are in the U.S. as a whole.

<sup>29</sup> The proposed ban on MTBE as an oxygenate additive in gasoline will likely exacerbate the already tight supply situation. This ban will effectively reduce the capacity of refineries producing CARB by as much as 11 percent, making it more likely that in the future the marginal source of supply for gasoline in California will be the Gulf Coast, for all or at least most of the year, unless substantial refining capacity is added.

## CURRICULUM VITAE

### R. PRESTON McAFEE

#### PERSONAL

Born 1956, Greenwich, CT USA, US citizen  
Married to Kristin McAfee, one child born October 1999

#### CONTACT:

Graduate School of Business  
University of Chicago  
Chicago, IL 60637

Office Phone: (773) 834-5942  
Office Fax: (773) 834-2081  
Email: [mcafee@eco.utexas.edu](mailto:mcafee@eco.utexas.edu)  
or [preston.mcafee@gsb.uchicago.edu](mailto:preston.mcafee@gsb.uchicago.edu)

<http://www.eco.utexas.edu/faculty/McAfee/index.html>

#### EDUCATION

Ph.D. (Economics) Purdue University, 1980  
M.S. (Economics) Purdue University, 1978  
M.S. (Mathematics) Purdue University, 1978  
B.A. (Economics) University of Florida, 1976 (Highest Honors, Phi Beta Kappa)

#### ACADEMIC EXPERIENCE

Visiting Professor of Business Strategy, University of Chicago GSB, 2000-2001  
*Murray S. Johnson Chair*, University of Texas at Austin, 1997-  
Chair, Department of Economics, University of Texas at Austin, 1997-8  
*Rex G. Baker, Jr.*, Professor of Political Economy, University of Texas at Austin, 1990-7  
Visiting Professor of Economics, Massachusetts Institute of Technology, 1994-5  
Professor of Economics, University of Western Ontario, 1989-1990  
Visiting Professor of Economics, California Institute of Technology, 1989-90  
Visiting Associate Professor of Economics, California Institute of Technology, 1988-9  
Associate Professor of Economics, University of Western Ontario, 1987-9  
Assistant Professor of Economics, University of Western Ontario, 1981-7  
Visiting Assistant Professor of Economics, Purdue University, 1980-1

#### PROFESSIONAL ACTIVITIES

Colin Clark Lecture, Australasian Econometric Society Meetings, 1998  
John S. Day Distinguished Alumni Award, Purdue's Krannert School of Management, 1997  
Fellow (1995) and Member of the Econometric Society  
Co-Editor, *American Economic Review*, 1993-  
Organized AEA session in honor of William Vickrey, 1992.  
Associate Editor, *American Economic Review*, 1992-3  
Associate Editor, *Journal of Economic Theory*, 1992-6  
Member of AEA, Society for the Promotion of Economic Theory, and Associate of American Bar Association

Referee for *AER*, *Econometrica*, *JET*, *JPE*, *REStud*, *JEL*, *QJE*, *J Math E*, *J Monetary E*, *EJ*, *IER*, *CJE*, *J. F.*, *JOLE*, *JEBO*, *Rand*, *J Pub E*, *IJIO*, *J Econometrics*, *Economica*, *REStat*, *J E Ed.*, *J Law E&O*, *European E Review*, *Scandinavian J E*, *SEPS*, *Math Soc. Sciences*, *ORSA J of Computing*, *J E Bus*, *Energy J*, *J Real Estate F&E*, *Contemporary Acc. Res.*, *NSF*

#### CONSULTING EXPERIENCE

Major clients: Ontario Hydro, U.S. Department of Justice, Great Northern Nekoosa, Lockheed-Martin, Pacific Telesys/AirTouch/PrimeCo (PCS auction design), BMC Software, Federal Trade Commission (Exxon/Mobil, BP/ARCO, Midwest Gasoline Prices), Duke Energy, Enron, SBC, Smythe-Cramer and Realty One, U.S. Department of Defense.

## **PUBLICATIONS: ARTICLES**

1. Measuring Anticompetitive Effects of Mergers When Buyer Power is Concentrated, *Texas Law Review*, Forthcoming, (with Kenneth Hendricks, Joshua M. Fried, Michael A. Williams & Melanie Stallings Williams).
2. Collusive Bidding in the Market for Corporate Control, *Nebraska Law Review* 79, forthcoming, (with Joshua Fried, Melanie Stallings Williams & Michael A. Williams).
3. The Effects of Vertical Integration on Competing Input Suppliers, *Federal Reserve Bank of Cleveland Economic Review* 35, no. 1, Quarter 1, 1999.
4. Auctioning Entry into Tournaments, *Journal of Political Economy*, 107, no. 3, June, 1999, 573-605 (with Richard Fullerton).
5. Tarrifying Auctions, *Rand Journal of Economics*, 30, no. 1, Spring, 1999 (with Daniel Vincent and Wendy Takacs).
6. Pretrial Negotiation, Litigation, and Procedural Rules, forthcoming in *Economic Inquiry*, (with Jiong Gong).
7. Four Issues in Market Design, *Revista Analisis Economico* 13, no. 1, Junio de 1998, 7-24.
8. Synergies in Wireless Telephony: Evidence from the MTA Auction, *Journal of Economics and Management Strategy*, 6, no. 10, Fall 1997, 497-527 (with Lawrence Ausubel, Peter Cramton, and John McMillan).
9. Sequentially Optimal Auctions, *Games and Economic Behavior* 18, 246-76 (with Daniel Vincent).
10. Competition and Game Theory, *Journal of Marketing Research* 33, August 1996, 263-7 (with John McMillan).
11. Analyzing the Airwaves Auction, *Journal of Economic Perspectives* 10, no.1, Winter 1996, 159-75 (with John McMillan).
12. The Evolutionary Stability of Auctions over Bargaining, *Games and Economic Behavior*, 15, 1996, 228-254 (with Xiaohua Lu).
13. Damaged Goods, *Journal of Economics and Management Strategy* 5, no. 2, Summer, 1996, 149-74 (with Ray Deneckere).
14. Organizational Diseconomies of Scale, *Journal of Economics and Management Strategy* 4, no. 3, Fall 1995, 399-26. (with John McMillan).
15. Multiproduct Equilibrium Price Dispersion, *Journal of Economic Theory* 67, no. 1, October, 1995, 83-105.
16. The Non-existence of Pairwise Proof Equilibrium, *Economics Letters* 49, 1995, 251-9 (with Marius Schwartz).
17. Opportunism in Multilateral Vertical Contracting: Nondiscrimination, Exclusivity and Uniformity, *American Economic Review* 84, no. 1, March 1994, 210-30 (with Marius Schwartz).
18. Endogenous Availability, Cartels and Merger in an Equilibrium Price Dispersion, *Journal of Economic Theory* 62, no. 1, February 1994, 24-47.
19. Mechanism Design by Competing Sellers, *Econometrica* 61, no. 6, November 1993, 1281-1312.
20. Collusive Bidding in Hostile Takeovers, *Journal of Economics and Management Strategy*, Winter 1993, 449-482, (with Dan Vincent, Mike Williams and Melanie Havens).
21. The Price Decline Anomaly, *Journal of Economic Theory* 60, June, 1993, 191-212 (with Daniel Vincent).
22. Horizontal Mergers in Spatially Differentiated Noncooperative Markets *Journal of Industrial Economics* XL, December 1992, 349-57 (with Joseph Simons and Michael Williams).
23. Updating the Reserve Price in Common Value Auctions, *American Economic Review Papers and Proceedings*, May 1992, 512-8 (with Daniel Vincent).
24. The Competitive Effects Section, *International Merger Law Events and Commentary* 21, May 1992, 6-9 (with Joseph Simons and Michael Williams).
25. Industrial Blackmail: Dynamic Tax Competition and Public Investment, *Canadian Journal of Economics* XXVI, no. 3, August 1993, 590-608 (with Ian King and Linda Welling).

26. Investment Decisions under First and Second Price Auctions, *Economic Letters*, 1992, 289-93 (with Ian King and Linda Welling).
27. Animal Spirits *American Economic Review* 82, no.3, June 1992, 493-507 (with Peter Howitt).
28. Bidding Rings, *American Economic Review* 82, no.3, June 1992, 579-99 (with John McMillan).
29. Amicable Divorce: Dissolving a Partnership with Simple Mechanisms, *Journal of Economic Theory* 56, no.2, April 1992, 266-93.
30. A Dominant Strategy Double Auction, *Journal of Economic Theory* 56, no.2, April 1992, 434-50.
31. Horizontal Mergers and Antitrust Policy, *Journal of Industrial Economics* XL, June 1992, 181-7 (with Michael Williams).
32. Correlated Information and Mechanism Design, *Econometrica* 60, No. 2, March 1992, 395-421 (with Philip Reny).
33. A Stone-Weierstrass Theorem without Closure under Suprema, *Proceedings of the American Mathematical Society* 114, Number 1, January 1992, 61-67 (with Philip Reny).
34. On What Economic Grounds should Horizontal Mergers be Challenged?, *International Merger Law* (with Michael Williams), no. 7, March 1991.
35. Optimal Contracts for Teams, *International Economic Review* 32, no.3, August 1991: 561-77 (with John McMillan).
36. Efficient Allocation with Continuous Quantities, *Journal of Economic Theory* 53, no. 1, February 1991: 51-74.
37. Externalities and Asymmetric Information, *Quarterly Journal of Economics* CVI, no. 1, February 1991: 103-121 (with Jeremy Greenwood).
38. Extracting the Surplus in Common Value Auctions, *Econometrica* 57, no.6, November, 1989: 1451-9, (with John McMillan and Philip Reny).
39. The Department of Justice Merger Guidelines: A Critique and a Proposed Improvement, *Pepperdine Law Review* 6, no.4, 1989 (with Michael Williams).
40. Government Procurement and International Trade, *Journal of International Economics* 26, 1989: 291-308 (with John McMillan).
41. Commodity Bundling by a Monopolist, *Quarterly Journal of Economics*, May 1989, 371-83 (with John McMillan and Michael Whinston).
42. Multidimensional Incentive Compatibility and Mechanism Design, *Journal of Economic Theory* 46, December 1988: 335-54 (with John McMillan).
43. Stability of Equilibria with Aggregate Externalities, *Quarterly Journal of Economics* 103, May 1988: 261-77 (with Peter Howitt).
44. Search Mechanisms, *Journal of Economic Theory* 44, February 1988: 99-123 (with John McMillan).
45. Can Event Studies Detect Anticompetitive Mergers?, *Economic Letters* 28, 1988: 199-203 (with Michael Williams).
46. Auctions with a Stochastic Number of Bidders, *Journal of Economic Theory* 43, October 1987: 1-19 (with John McMillan).
47. Competition For Agency Contracts, *Rand Journal of Economics*, Summer 1987 (with John McMillan).
48. Auctions with Entry, *Economics Letters* 23, 1987: 343-7 (with John McMillan).
49. Auctions and Bidding, *Journal of Economic Literature*, June 1987 (with John McMillan).
50. Nonlinear Contracts, Zero Profits and Moral Hazard, *Economica* 54, February 1987: 97-102 (with Raymond Fische).
51. Costly Search and Recruiting, *International Economic Review* 28, February 1987: 89-107 (with Peter Howitt).
52. Bidding for Contracts: A Principal-Agent Analysis, *Rand Journal of Economics*, Autumn 1986 (with John McMillan).
53. Sequential Procurement Auctions, *Journal of Public Economics* 31, 1986: 181-95 (with Richard Luton).
54. Optimal Tenure and the Timing of Faculty Meetings, *Studies in Economic Analysis* 10, 1986.

55. Unemployment Insurance and the Entitlement Effect: A Tax Incidence Approach, *International Economic Review* 27, February 1986 (with John Barron and Paul Speaker).
56. Joint Search for Several Goods, *Journal of Economic Theory* 32, April 1984 (with John Carlson).
57. American Economic Growth and the Voyage of Columbus, *American Economic Review*, September 1983.
58. Discrete Equilibrium Price Dispersion, *Journal of Political Economy*, June 1983 (with John Carlson).
59. On the use of Bonus Payments in an Experimental Study of Electricity Demand, *Review of Economics and Statistics LXV*, no.3, August 1983: 506-11 (with Raymond Fishe).
60. Optimal Design of a Decision Support System, *International Journal of Policy Analysis and Information Systems* 6, 1982 (with Andrew Whinston).
61. An OIS Model for Internal Control Evaluation, *ACM Transactions on Office Information Systems*, ACM-SIGOA, November 1982 (with Andrew Bailey, James Gerlach and Andrew Whinston).
62. An Application of Complexity Theory to the Analysis of Internal Control, *Auditing: A Journal of Practice and Theory*, Summer 1981: 38-52 (with Andrew Bailey and Andrew Whinston).
63. Internal Accounting Controls in the Office of the Future, *IEEE Computer Journal*, May 1981 (with Andrew Bailey, James Gerlach and Andrew Whinston).
64. Formal Analysis of Internal Control-An Introduction *The Proceedings of the First European Workshop on Information Systems*, Aix-en-Provence, 1981 (with Andrew Bailey, James Gerlach and Andrew Whinston).
65. A Formal Model of Problem Solving, *International Journal of Policy Analysis and Information Systems* 4, 1980 (with Andrew Whinston).

#### **PUBLICATIONS: BOOK**

*Incentives in Government Contracting*, with John McMillan, Toronto: University of Toronto Press, December, 1988.

#### **PUBLICATIONS: CHAPTERS IN BOOKS**

1. Matching and Expectations in a Market with Heterogeneous Agents, *Advances in Applied Micro-Economics, Volume 6*, ed: Michael Baye, Greenwich, CT: JAI Press, (with Xiaohua Lu).
2. Convergence to Efficiency in Double Auctions, *Advances in Applied Micro-Economics, Volume 6*, ed: Michael Baye, Greenwich, CT: JAI Press, (with Jiong Gong).
3. Electronic Markets, *Readings on Electronic Commerce*, (with John McMillan).
4. Modelling Transactions under Asymmetric Information, *Recent Developments in Game Theory*, Eds: J. Creddie, J. Eichberger, and J. Borland, London: Edward Elger, 1991 (with John McMillan).
5. Ticom II - The Internal Control Language - An Introduction, *Internal Control and the Impact of the Foreign Corrupt Practices Act*, ed: Abdel-Khalik, Gainesville: University of Florida Press, 1982 (with Andrew Bailey, James Gerlach and Andrew Whinston).
6. Office Automation, *Handbook of Industrial Engineering*, New York: Wiley and Sons, 1982 (with Andrew Bailey, James Gerlach and Andrew Whinston).

#### **PUBLICATIONS: BOOK REVIEW**

*The Economics of Conformism*, by Stephen Jones, reviewed for *The Canadian Journal of Economics*, February 1986. Reprinted in *The Canadian Journal of Economics*, February, 1987.

#### **UNPUBLISHED MANUSCRIPTS**

Production Capacity for Durable Goods  
 Measuring Industry Concentration in Intermediate Goods (with Ken Hendricks)  
 Feints (with Ken Hendricks)  
 The Continuing War of Attrition  
 How to Set Minimum Acceptable Bids (with Daniel Quan and Daniel Vincent)  
 Equilibrium Price Dispersion with Consumer Inventories (with Pilky Hong and Ashish Nayyar)