

# Role of vibrant retail electricity markets in assuring that wholesale power markets operate effectively<sup>1</sup>

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## 1 Executive summary

Over the past five years electricity market restructuring has been focused predominately on creating efficient wholesale commodity markets. Considerably less attention has been paid to the retail market's impact on overall customer benefit from electricity restructuring. As evidence from California, Massachusetts, and Pennsylvania demonstrates, vibrant retail electricity markets are critical in assuring that final customers receive the full benefits of competition in wholesale electricity markets. The ongoing restructuring process taking place in most states provides policymakers with a unique opportunity to design durable mechanisms for ensuring competition at the retail level. Failure to provide for vibrant retail markets means that such markets will be distorted as they respond to incomplete price signals, limiting price transparency and customer choices. In addition, a weak retail market will exacerbate the ability of key players to pass price increases through to final consumers, magnifying the effect of wholesale market concentration.

The sections below discuss the dynamic relationship between retail and wholesale markets in greater detail. We provide a brief analysis of the economic fundamentals, summarized below, and highlight several examples from the software, telecommunications, aircraft manufacturing, and gasoline retailing industries. These examples substantiate concerns about dynamic efficiencies, vertical control, and suppression of new entrants. Key points are as follows:

- **vibrant retail electricity markets are defined as those with multiple strong players**, and at least one major player which is not affiliated with a regional incumbent;
- artificially low “shopping credits” or **forced wholesale price pass-through designs provide false economies** by failing to provide the products that customers really want;
- **lack of true retail competition means that wholesale prices provide inaccurate signals** regarding need for new build, desired technologies, and optimum project size, leading to price inefficiencies and higher final prices to consumers; and
- under wholesale price pass-through and poorly designed shopping credit models, **wholesale market institutions and/or default suppliers become de facto monopolies**, increasing the ability of upstream players with market power to pass on price increases

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Policymakers can contribute to instituting true retail competition by avoiding wholesale price pass-through, setting shopping credits high enough to reflect the true costs of providing retail service, and by isolating legislated rate cuts to the wires portion of the customer's bill. These measures will help assure that customers enjoy the full benefits of retail competition, including lower prices for products consumers actually want, more choices in products and services, and access to new technologies.

Throughout this paper we use the term efficiency to denote a functioning market in which buyers and sellers receive accurate and timely price information with limited transaction costs. While a wholesale price pass-through model may appear to be efficient in this sense, it is only superficially so. The wholesale price pass-through model fails to provide consumers with products they actually want by limiting the margins available to new retail entrants. It thereby actually raises transaction costs for those customers looking for customized billing options, new technologies, and cost-effective risk management structures. This has a disproportionate impact on small consumers, who become more exposed to fluctuating wholesale prices.

## 2 Importance of retail markets to competition in wholesale markets

During the process of restructuring the US electricity sector, much of the regulatory attention to date has been focused on creating efficient wholesale energy markets. Regulators have assumed that prices to final consumers would fall, or increase at a slower rate, if competition in wholesale energy markets could be assured. Much effort has gone into designing market surveillance mechanisms, assessing potential bidding behavior, and analyzing the implications of price caps. However, the role of retail markets in assuring competition in wholesale markets has often been overlooked.

***The role of retail markets in assuring competitive outcomes in wholesale markets has often been overlooked...***

Vibrant retail electricity markets contribute to competitive wholesale markets in several ways:

- First, they contribute to dynamic efficiency by improving the information conveyed by the price signals provided by wholesale markets.
- Second, competitive retail markets reduce the potential for *de facto* vertical control, weakening the ability of wholesale players to pass price increases through to final consumers.
- Third, the existence of multiple credible players in the retail market contributes to the ability of new entrants to generation markets to obtain contracts for their output, thus improving the ability of new entrants to attract financing and therefore complete their projects.

There is limited experience with retail competition in electricity in North America. In the states and provinces which have instituted retail competition or are planning to do so in the near future, two broad models have appeared. The first, called wholesale price pass through, links the default supply alternative with a floating market price relevant for the geographic region in question. This is similar to the procedure adopted in California. The second, referred to as the shopping credit model<sup>2</sup>, provides customers with a credit on their monthly bills which is related to the cost of generation services which was previously part of the bundled cost of service. The level of the shopping credit is a key determinant of the number of participants in the retail market. Pennsylvania is one state which has adopted this model.

An electricity market which is open for competition does not in itself create a vibrant retail market. California's wholesale price pass-through creates an artificial price to compare, the wholesale commodity price. Because the wholesale price is only one component of the many costs of providing retail service, this artificial price comparison actually serves as a barrier to entry for new retail suppliers. In contrast, Pennsylvania's shopping credit model creates a price to compare which mimics a retail price which includes all of the cost components of retail supply, rather than only the wholesale component.

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<sup>2</sup> The shopping credit model is sometimes referred to as the "price to compare" in some of the public policy literature.

A vibrant retail electricity market can be described as one in which market share is divided among five or more significant players, of which no single player controls more than 20% of the customer base but several control 5% or more. A number of these players should be unaffiliated with the incumbent utilities. These market share criteria broadly reflect the guidelines of which Federal competition regulators<sup>3</sup> use when assessing market concentration, and are intended to provide a marketplace in which no one player dominates.

**...presence of retail players that are not affiliated with incumbents is one indication of a well designed retail market...**

The 5% market share level is consistent with the number of customers a retailer in a market the size of Pennsylvania's needs to begin capturing economies of scale. The presence of participants without substantial ties to incumbent utilities indicates that sufficient measures have been taken to curb any unfair advantage conferred by identification with incumbents' existing brands and reduces the potential for abuse of vertical linkages between incumbent generators and their retail affiliates. While by these measures no US retail electricity market has yet reached a point that could be characterized as vibrant, Pennsylvania appears to be the state in which such a market is most likely to evolve.

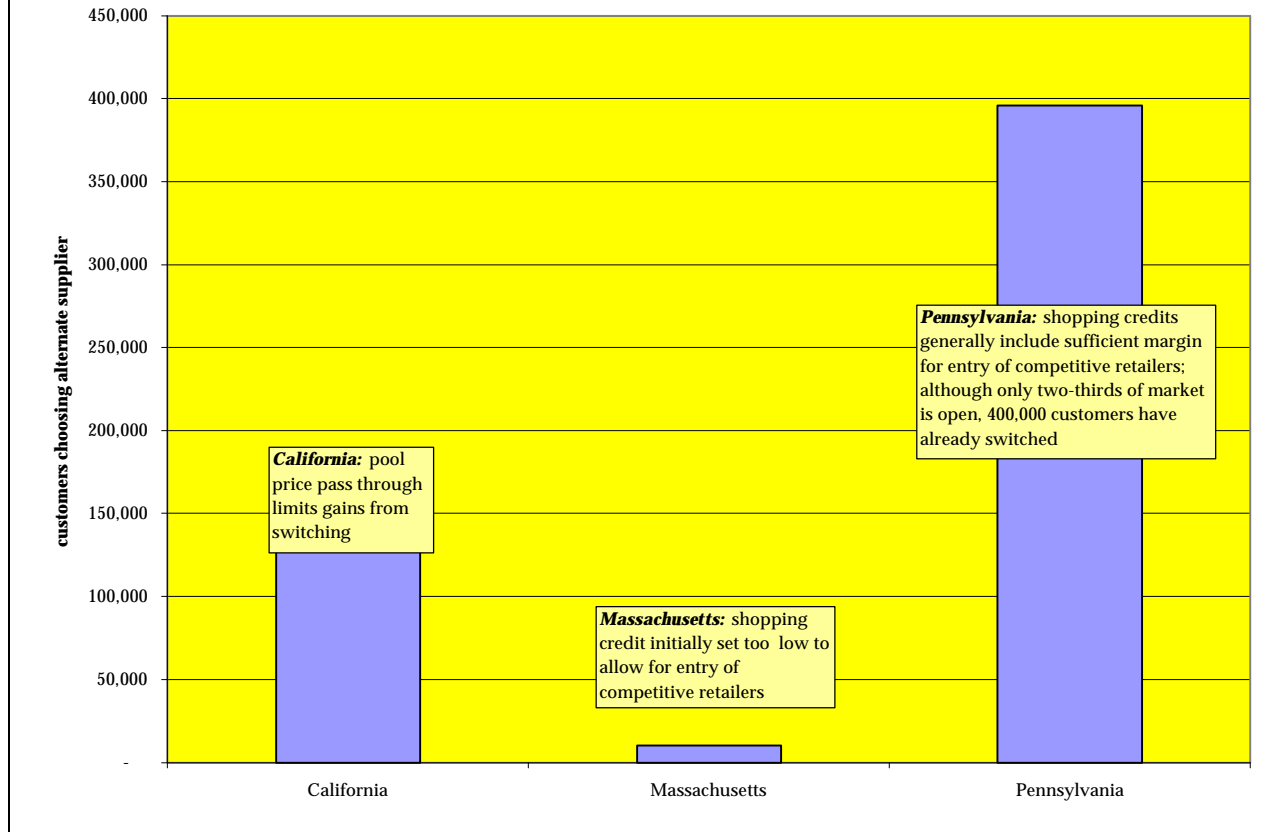
In the US, the retail markets which have shown the least amount of sustainable entry have been those which featured either a wholesale-price pass through mechanism (California) or those in which the shopping credit was set inappropriately low (Massachusetts, see Figure 1). Wholesale price pass through systems give the appearance of reducing transaction costs in the short term, but actually increase such costs over the long term. This is because retail entrants refuse to enter markets where they essentially must sell power at a loss relative to the wholesale price to entice customers to switch, while at the same time, they must incur additional costs for marketing, billing, and customer support. The lack of retail entrants reduces the availability of innovations such as flexible payment plans, fixed price contracts for small customers, and combined power supply and energy services contracts.

In effect, the wholesale market becomes a monopoly supplier to retail customers. This tends to magnify the effects of any concentration that exists at the wholesale level, potentially further increasing costs to final consumers. The California Power Exchange, from which utilities serve customers who have not switched, supplies nearly 99% of small retail customers in the state. Besides the green power option offered by companies like Green Mountain, few product or service choices are being offered to small customers. The opportunity to offer price savings would attract more competitors into California. An adder to the wholesale price which would accurately account for additional costs associated with retail would force players to compete on an equal footing, ultimately forcing suppliers to further differentiate themselves in terms of price and product offerings. This would result in more choices, convenience, and ultimately higher savings over the long run.

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<sup>3</sup> We refer here to regulatory bodies such as the Federal Trade Commission and the US Department of Justice.

**Figure 1. Progress as of June 1999 in creating competitive retail markets has been mixed<sup>4</sup>**



Artificially low shopping credits, such as those in Massachusetts, have had a similar effect. Failure to accurately account for embedded advantages in billing, customer acquisition, and supporting infrastructure in the shopping credit places competitive suppliers at a disadvantage relative to incumbents. This further entrenches existing players, significantly limiting the potential for customers to fully benefit from retail competition.

<sup>4</sup> Massachusetts opened its market to competition thirty days prior to California and has seen even less retail marketing activity. However, the price to compare or “shopping credit” in Massachusetts increases over time, potentially creating more space for competitive retailers as time goes by.

**...wholesale price pass-through models fail to provide elements that customers value, such as price certainty, flexible billing, and customized power blends...**

Vibrant retail electricity markets reduce total costs to consumers. Markets which provide cheap products that customers do not want cannot be said to be truly efficient. Thus, a wholesale price pass-through model may appear to provide low prices, but fail to provide elements that customers value, such as price certainty, flexible billing, and customized power blends. Since the price for these components is prohibitive in the absence of multiple retail players, total costs to consumers are actually *higher* than in jurisdictions with more vibrant retail markets. This is even before accounting for the impacts of virtual vertical integration on the potential for collusive upstream behavior, which makes it less likely that prices will be low at all.

The remainder of this paper discusses the theoretical background for the implications of the inter-relationship between wholesale and retail markets, provides examples of this interaction from other industries, and discusses the steps that policy makers need to take to assure that competitive retail markets evolve in electricity.

### 3 Economic fundamentals of retail-wholesale relationships

The three major areas in which vibrant retail markets support more efficient wholesale markets are described below with the theoretical background supporting each.

#### 3.1 Dynamic efficiencies

By increasing the scope of competition in electricity markets, well-designed retail electricity markets enhance the dynamic efficiency benefits that constitute the core motivation for the restructuring of the electricity industry in the first place. Dynamic efficiencies are what electricity restructuring is all about. Short-term optimization was achieved without need for competition from the 1960s on, with the development of computing power and remote information and control systems. Given a set of loads, generation resources, and transmission facilities, central dispatch systems have for a long time been able to determine the least-cost mix on a real-time basis.

#### Ways in which competitive retail markets improve the quality of price signals:

- **encourage development of technologies to increase price responsiveness**
- **enhance access to wholesale markets by smaller users**
- **increase variety of risk management products available**
- **improve ability for customers to express tastes and preferences**

The failures that motivated restructuring were thus not at the level of short-run optimization, but at the level of **long-term capacity choices**, which ultimately result in long term **misallocation of capital**. Regulated or planned decision processes for choosing future generation and transmission resources turned out to contain substantial deficiencies, such as the possibility of overinvestment<sup>5</sup>, errors in fuel price forecasting, excessive intrusion of political considerations (e.g., promotion of nuclear power for defense-related reasons), and others.

The reversal of economies of scale in generation created pressure to allow competitive forces to determine the allocation of capital, without regulatory or tax guarantees for the recovery of investment. However, to allocate capital efficiently, reliable price signals are required. Markets which do not facilitate retail entry by outside suppliers deny customers the ability to express their tastes and preferences by switching suppliers. This can lead to further capital misallocation, underinvestment, and unresponsive pricing.

Competition at the level of retail electricity supply can enhance the dynamic efficiency benefits of deregulation by increasing competitive pressure in a number of ways:

- The **development of technologies and contractual mechanisms to increase the price responsiveness** (price elasticity) of electricity demand by small users, such as automatic

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<sup>5</sup> This is the well-known Averch-Johnson (1962) effect. In a seminal paper, Averch and Johnson showed that standard regulatory mechanisms, such as one where the firm is able to make a regulated rate of return on capital, would give sub-optimal incentives to firms and cause an over-investment in capital.

- equipment controls, discounts and rebates for load shifting or load management, and so forth. Such peak shaving mechanisms are among the most cost-effective ways of reducing the potential for price spikes, such as those that occurred in the Midwest during the summer of 1998.
- The supply of services related to electricity, such as remote metering, billing, multi-product bundling, marketing and contracting, etc., which can result in **enhanced access to wholesale markets by smaller users** and therefore increase opportunities for arbitrage and gains from trade. Arbitrage and gains from trade occur whenever mutually valuable trades can occur between prospective sellers and buyers. Without retail competition, many such trades cannot occur, because the opportunity for prospective buyers to bid for attractive purchasing deals is suppressed or at least distorted by the aggregation and administrative mechanisms placed in the stead of retail competition.<sup>6</sup>
- The **variety of electricity-related products with regard to risk management increases**, for instance by offering differing degrees of protection from price variability, which can enhance the benefits of trading for sellers and buyers. Where vibrant retail markets are lacking, customers are often forced to rely on physical alternatives, such as the purchase of a back-up generator, to guard against price spikes and outages. Financial alternatives, such as insurance and hedging mechanisms, help to avoid such relatively inefficient uses of capital. However, such products are unlikely to exist in markets which have been structured in a way which fails to provide economic returns to retail entrants.
- The **identification of other product dimensions valued by users improves**, such as reliance on environmentally-preferred generation technologies, which again can increase the gains from trade in electricity. Identifying valuable product dimensions can have a deep dynamic impact on wholesale markets by changing the profile of demand in wholesale markets and thus altering patterns of research and innovation. As an example, the deregulation of the airline industry has affected product innovation in the commercial jet industry by allowing better revelation of passengers' preferences about cabin arrangements.

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<sup>6</sup> Economic theory rightly regards gains from trade and arbitrage as “static” rather than “dynamic” benefits of markets. On the other hand, the “new” trade theory, and abundant empirical evidence, show the dramatic dynamic effects that trade (or the lack thereof) can have. When the scope of competition is extended by increasing opportunities to trade (for instance, by removing barriers to international trade), dramatic changes in the structure of economic activity occur, reallocating resources from activities of low to high relative value, and stimulating product innovation and investment to maintain competitive market positions.

### 3.2 Vertical market power

***In wholesale price pass-through systems, the wholesale pool can be considered a monopoly supplier...***

Economists refer to the interactions between retailers and wholesalers (also called downstream and upstream firms) as vertical interactions. When wholesale and retail functions are combined within a firm, the firm is said to be vertically integrated. The strength of vertical relationships in the electric power sector depends on the level of competition at both the retail and wholesale levels. In wholesale price pass through

systems, and in jurisdictions where artificially low shopping credits have led to a reliance on default suppliers, retail markets essentially become a dependent function of wholesale markets. In other words, price formation at the retail level is largely determined by wholesale market dynamics; retail markets have little independent ability to influence wholesale markets. To determine the extent to which this level of virtual vertical integration in the electric power sector is harmful to final consumers, it is useful to review the economic literature regarding vertical relationships.<sup>7</sup>

A basic tenet of this paper is that effective retail competition will foster the competitive structure of the entire electricity market. The economic arguments supporting this statement have developed as follows. As early as 1950, economically inclined antitrust jurists such as Learned Hand recognized the role an upstream firm could play in downstream competition. In his landmark *Alcoa* opinion, most economists agree Hand correctly realized that Alcoa's 96% market share in bauxite ore gave it an effective monopoly in aluminum products, even though its market share in finished aluminum products was quite small. Part of the insight was that a firm that has monopoly control at any stage of the vertical chain has an effective monopoly of the entire market. Thus, the converse holds in this case, i.e., if Alcoa held 96% of the market for finished aluminum products, it would also have an effective monopoly even if bauxite was competitively supplied.

***...a firm that has monopoly control at any stage of the vertical chain has an effective monopoly of the entire market...***

Economists and the courts next recognized that wholesaler-retailer contracts could be used to extend market power vertically, from the upstream firm to the downstream firm, even without direct ownership or vertical integration. These included contractual arrangements such as resale price maintenance (RPM), exclusive territories, and tying, all of which were deemed illegal by the courts. The courts saw these so-called vertical restraints as attempts by upstream firms to limit downstream competition and thereby extend their market power. Other economists then countered that there were real efficiency reasons for vertical control and vertical integration. Efficiency reasons for vertical integration could include the need to provide a costly but difficult to observe service with sales of the good. The current state of economic research on vertical control involves the details of how to weigh the potential costs of vertical

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<sup>7</sup> A vast body of academic literature has been written on the subject since the mid-1950's when the economic questions involved were first crystallized, often by antitrust jurists. A bibliography with sources for this research is attached.

control (due to downstream market power extension) vs. the potential benefits (due to increased efficiency). The only rule that has emerged from this research is that one must weigh the likely magnitude of costs vs. benefits.

***Incumbent utilities may not want retail competition because it inhibits the ability of their newly deregulated generation subsidiaries to exercise full monopoly power...***

It is almost axiomatic that a poorly performing wholesale market will imply poor final market performance, because the upstream market will pass-on high prices to downstream buyers.<sup>8</sup> Likewise, a poorly performing retail market will also imply poor wholesale market performance. Equivalently, under certain conditions, when there is a wholesale-to-retail structure,

improving retail competition unambiguously improves social welfare (Tirole, 1987), (Rey and Tirole, 1986). In *The Theory of Industrial Organization*, MIT Professor Jean Tirole states, “Retail competition destroys profit.” (p. 193, 1987) and hence manufacturers do not want retail competition because it inhibits the upstream firms’ ability to “exercise full monopoly power ”.<sup>9</sup>

Under certain conditions, the wholesale-price-pass-through model is equivalent to vertical integration. Under this structure, currently in place in California, customers pay the average wholesale market clearing price on the California Power Exchange over a certain time period. The intuition is that, under the wholesale price pass-through model, upstream firms are able to pass any price increases on to consumers directly. Therefore, if wholesale price changes are fully passed on, wholesalers effectively have vertical control. Conversely, with a vibrant retail market, an upstream price increase will be partially absorbed by the retailer in the form of lower margins. This case is often observed in the fact that retail gas stations, for example, do not find it optimal to pass one-to-one price increases from say, an excise tax, to consumers.

The social welfare gains to be had from moving to a competitive retail market can be seen in the following graph. The graph shows the effect of an increase in wholesale prices on retail prices and social welfare. In the graph, anti-competitive behavior in the wholesale power market results in an upward shift of the supply curve. The anti-competitive behavior of wholesalers will yield higher wholesale prices no matter what, but the impact on retail prices and social welfare will depend on how competitive the retail market is.

If there is a competitive retail market, retailers cannot charge anything above marginal cost. If a retailer in a competitive retail market tries to charge anything above marginal cost, consumers will buy from other retailers who are willing to charge marginal cost. At any given level of demand, therefore, price is equal to marginal cost. Graphically, the competitive price is at the intersection of the supply curve and the demand curve. The competitive prices before and after the upward shift of the supply curve are represented in the graph as  $P_c$  and  $P_c'$  respectively. If

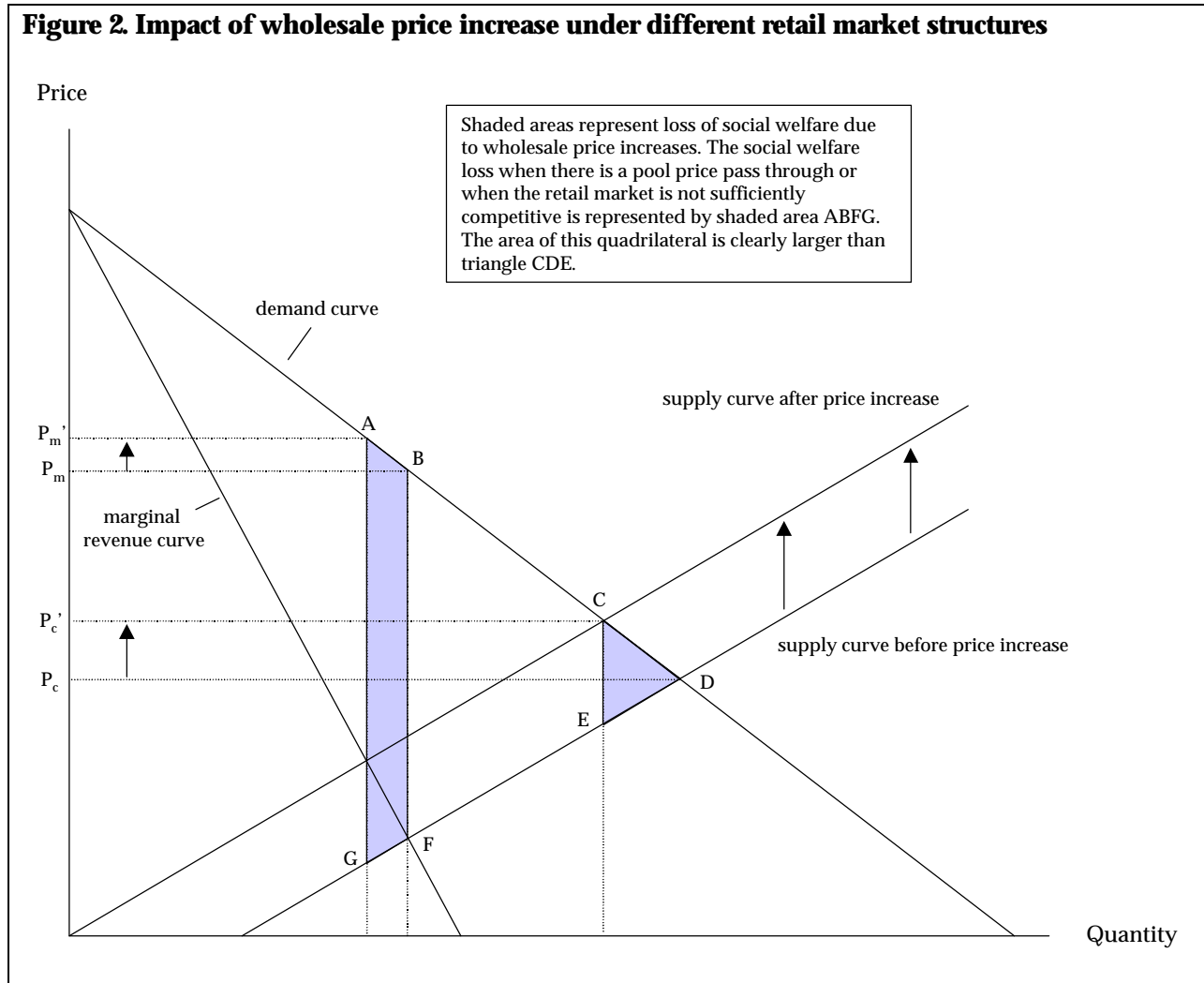
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<sup>8</sup> Market performance generally refers to whether prices charged to final consumers are as low as the marginal cost of the product. There may be other issues with market performance such as whether consumers are receiving an optimal level of reliability, choice, product information, etc.

<sup>9</sup> The conditions are uncertainty over demand and supply cost—precisely the conditions in electricity markets.

there is a lack of competition in the retail market, or if retailers simply pass wholesale prices on to customers, retail prices will be at the intersection of the demand curve and a line drawn vertically from the intersection of the marginal revenue curve and the supply curve, because this is the level at which profits are maximized. In the graph, prices under such circumstances are represented by  $P_m$  and  $P_m'$  respectively. Note that the price levels with a competitive retail market are lower than when the market is not competitive.

**Figure 2. Impact of wholesale price increase under different retail market structures**



The loss in social welfare due to the wholesale price increase is represented in the graph by the shaded regions. In the graph, the loss in social welfare when there is a competitive retail market is represented by the triangle CDE. The social welfare loss when there is not a competitive retail market, or if wholesale prices can be passed on to customers, is represented by the shaded region ABFG. Since the latter shaded region is clearly much larger than the former, it can be concluded that the loss of social welfare from wholesale price increases is greater when there is a lack of competition in the retail market. It can also be seen from the graph that, if wholesale prices are not passed on to consumers, wholesalers have much less incentive to engage in anti-

competitive behaviors. This is because the full gains from having market power can only be realized if production is set at the level where marginal revenue equals marginal cost.

### **3.3 Facilitation of new entrants**

An extension of the argument regarding vertical relationships relates to the impact of competitive retail markets on the ability of new entrants to attain financing and thereby develop viable projects which can compete with incumbent firms. The tenets of project finance dictate that to the extent possible, a project should be financed using loans that have recourse solely to the assets of the project rather than to the balance sheet of the parent company or developer. Such loans can be secured in two ways: against the physical assets of the firm, whose value fluctuates given expectations about wholesale power prices, or against a series of contracts the project has to provide power to specific customers at a fixed price for a predetermined period of time.

Firms which are able to show lenders plans for a project which include contracts for the output, even if such contracts are for a relatively short term (two to five years) are able to obtain better financing packages than those firms seeking to finance on a purely “merchant” basis, that is, selling only into the wholesale market with no contract cover. However, in order to have a contract, a viable counter-party must exist. Competitive electricity retailers are natural counter-parties for new generation projects. Generation project developers need to show backers stable near-term revenue streams; retailers that have offered customers fixed price contracts need to be able to cost-effectively hedge their exposure by entering into a portfolio of firm and optional power supply contracts with generators. Without a competitive retail sector, there are fewer natural counterparties, ultimately raising the cost of financing new projects since such projects are viewed as more risky without some initial contract cover.

Currently, although we have seen active development of merchant plants in several regions without vibrant retail markets, developers in these markets are being asked to put up an increasing amount of equity to compensate for the added risk of having little or no contract cover. This eliminates many smaller players who lack the balance sheet to meet increased equity calls. In markets like New England, we are already starting to see smaller players sell out to larger firms with established market positions in other regions. At the same time, fuel suppliers are becoming increasingly reluctant to subordinate fuel payments, choking off another source of financing. This means small players face increasingly onerous financing costs.

Wholesale price pass-through and poorly specified shopping credit markets fail to create viable counter-parties for new generation projects. Because this increases the cost of new entry, it helps entrench existing suppliers, potentially increasing their market power. In the US, the most profound example of this can be found in the Midwest, where few states have developed retail access programs to date. Despite a capacity shortfall, the region has seen little new build announced. Florida presents a similar situation. Should incumbent utilities in these regions wish to maintain wholesale market dominance, we can expect them to argue for either

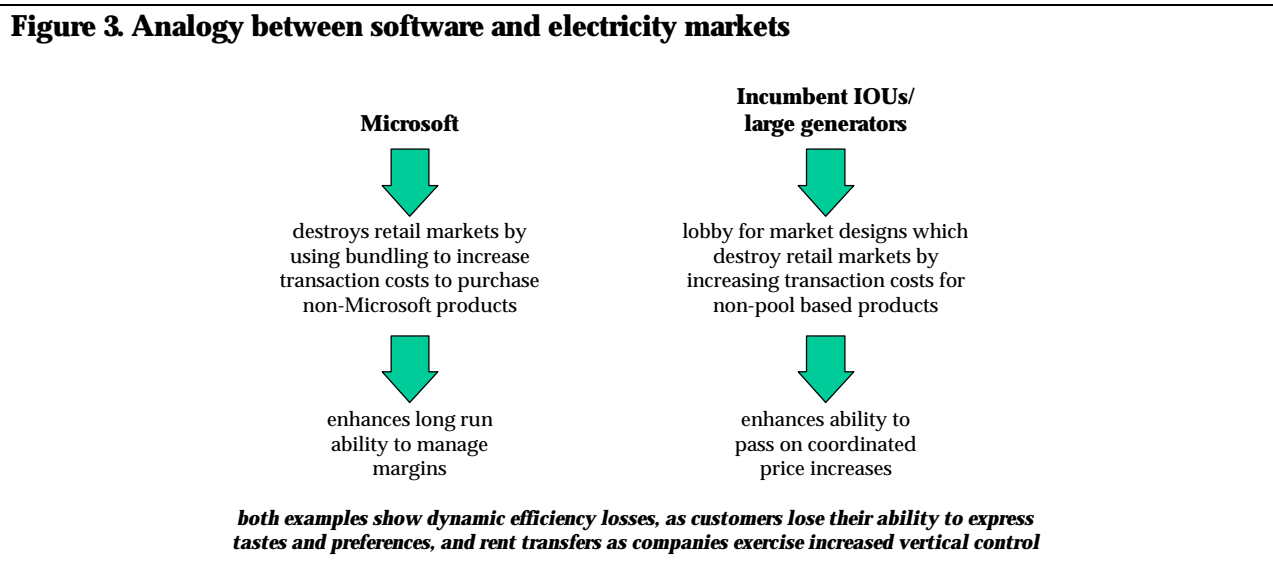
wholesale price pass-through systems or to push down shopping credits to artificially low levels to eliminate any incentive for customers to switch.

#### 4 Retail market contribution to development of wholesale market competition: examples from other industries

The following section provides several examples of how customers suffer when retail markets fail to function properly and benefit when retail markets work effectively. Software markets have shown a decrease in choices available to consumers due to Microsoft’s dominance at the wholesale level. In contrast, airline markets have provided increased choices in aircraft models as a result of powerful new players arising in the retail aircraft market. Finally, the explosion of fiber optic capacity is partly attributable to the opening of the retail long distance market; customers have benefited by continued real declines in the cost of long distance service. The general lesson: without a strong retail sector, wholesale players dictate terms that reinforce their dominance.

##### 4.1 Elimination of retail markets in the software industry

The methods used by Microsoft to eliminate pressure from competitive retail markets is a classic case with which to demonstrate the effects downstream competition can have on upstream competition. Microsoft has achieved levels of market dominance that have not been seen in any industry since the days of the late 19<sup>th</sup> and early 20<sup>th</sup> century. Some of its alleged business practices have attracted antitrust scrutiny. Although the example is admittedly stylized, it nonetheless represents what could be considered a “worst-case” of what happens when retail markets are systematically circumvented.



The economic relationships between hardware manufacturers and software manufacturers are complex and have been changing over time. In the early days of the PC industry, there were several small PC manufacturers; some produced their own operating system (OS) software (e.g.:

Apple) and some did not. At that time, PCs came with little or no software preinstalled on the actual machine. Even the OS software would most likely be loaded onto the machine with a diskette that would have been purchased at a retail outlet or via a salesperson. One might therefore compare the early relationship between hardware and software to cars and gasoline. A car won't run without gasoline; a PC won't run without an OS.

The PC industry was largely ignored by established computer giants like IBM and DEC, which specialized in mainframes and minicomputers. Three events changed this dynamic.<sup>10</sup> First, IBM decided to enter the PC market and license its OS software from Microsoft. Second, Apple invented the graphical user interface (GUI) making machines much more user friendly. Third, Lotus and WordPerfect developed spreadsheet and word-processing applications that would run on the new machines, massively expanding the uses of the PC from mere toys to work tools.

With the advent of basic applications like word-processing and spreadsheets, PCs became practical and popular products. IBM recognized this market shift relatively late. It needed to establish a presence quickly, so it decided to license most of the equipment for its IBM PC, maintaining rights over only a small piece of the architecture. Initially, IBM seemed to have succeeded with its (licensed) operating system and the IBM PC dominating the market. What it did not anticipate was the ability of smaller and leaner computer hardware manufacturers to copy its architecture and use Intel chips and Microsoft's OS. Within a few years IBM had largely shut down its PC business and conceded defeat to smaller more efficient producers such as Dell and Compaq.

Subsequent events have caused problems for Microsoft with the Department of Justice anti-trust enforcement authorities. Microsoft started making an increasingly aggressive effort to persuade PC manufacturers to pre-install its OS onto all their machines. It also started encouraging manufacturers to enter into agreements to pre-install Microsoft's "other" products, such as MS Office, or more lately, MS Explorer, to the exclusion of other software manufacturers. Essentially, Microsoft's strategy has been to bypass the retail market to ensure its software products are seldom sold in a competitive forum. With such bundling tactics, Microsoft surpassed the front-running OS and Apple's Macintosh line, and then went on to dominate spreadsheets and word processing, leapfrogging Lotus and Borland (Quattro Pro). The latest Microsoft target has been Netscape and its internet browser, which was overtaken by MS Internet Explorer.

***Microsoft's actions have systematically undermined retail markets, enhancing the firm's upstream market power and increasing costs to consumers, particularly in effective transaction costs for consumers who wish to run non-Microsoft products on machines sold bundled with Microsoft products. Similar outcomes are likely in electricity markets without effective retail competition, as transaction costs may become prohibitive for customers who want non-standard products or service bundles.***

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<sup>10</sup> In order of importance rather than chronological.

## 4.2 Vertical market power in aircraft manufacturing

Deregulation of the US airline industry has sparked dramatic changes in the upstream market for aircraft. Two decades ago, US airlines operated in a heavily regulated environment which contained few competitive pressures. Airfares were set by the US Department of Transportation, and adding flights or changing routes entailed a lengthy approval process. Traditionally, airlines purchased planes directly from the manufacturers; intermediate markets did not exist. By the 1980s, the number of wholesale aircraft manufacturers for long haul passenger jets had fallen to four; by the late 1990s, the number had fallen to two. However, the dramatic changes wrought on the industry at the retail level have meant that aircraft manufacturers today arguably have less market power than when deregulation began, even though the number of players has been cut in half.<sup>11</sup>

The reduction in wholesale aircraft manufacturers' price enforcement ability has arisen for two reasons. First, an intermediary market has become established consisting of aircraft leasing companies. These leasing companies play a dual role; they are at once both major consumers of aircraft as well as an alternative supplier of aircraft. The ability of leasing companies to provide planes on more flexible terms than the manufacturers has cut into the ability of aircraft manufacturers to make price increases stick. At the same time, the massive numbers of planes leasing companies purchase gives them more clout with the manufacturers in terms of volume discounts than some small airlines are able to achieve.

Leasing companies would have been unlikely to evolve out of the old regulated system of airline service, since flexibility and cost-control were not key determinants of profitability. Once consumers were able to shop around for airline tickets, airlines were forced to demand new purchasing options and better pricing from upstream suppliers. Likewise, deregulation allowed customers to reveal preferences for non-price attributes of service, such as smaller, quieter planes and direct regional flights. Airlines responded by demanding different types of planes, and different configurations in planes. This led to an entire new category of aircraft, the regional jet, and a new niche of commercial aircraft providers.

***The innovations in product design and payment flexibility which arose in the aircraft industry as a result of increased retail competition, coupled with the decrease in manufacturer market power, have improved the efficiency of the wholesale market and improved consumer welfare. Similar effects occur in electricity as innovative retailers provide associated energy services, customized billing options, and access to new energy sources.***

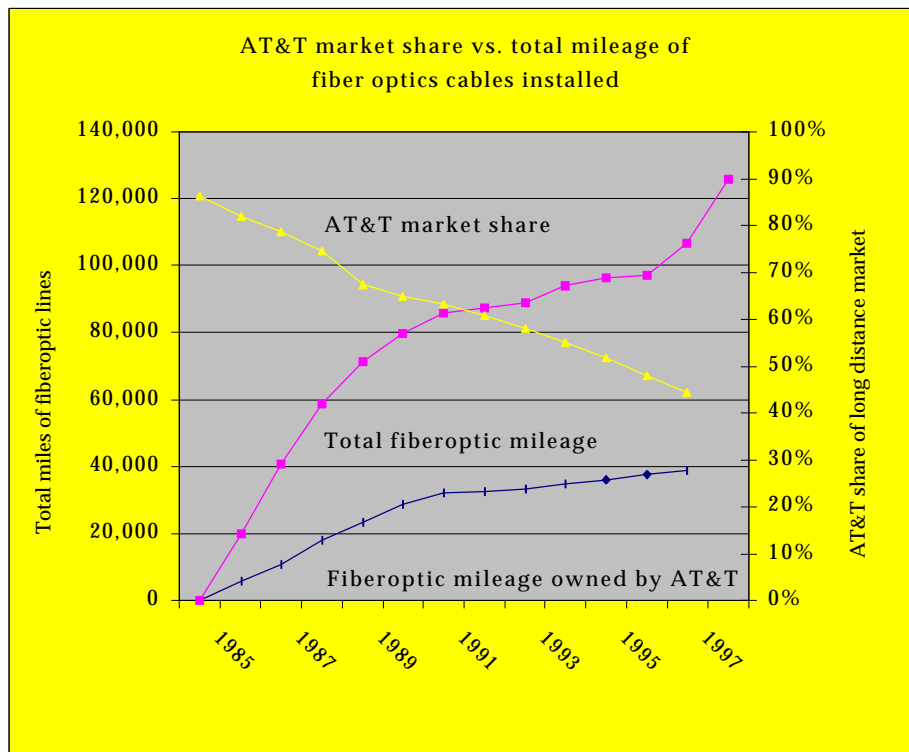
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<sup>11</sup> It is important to recognize that some economists would argue that the social gains from decreasing costs of airline travel in the US have not been Pareto optimal, in the sense that some smaller markets have lost service and or faced higher prices. Choice in retail electricity markets will not have the same effect; costs for competitive retailers (as opposed to providers of "wires" type services) to serve rural markets are not significantly different from those for serving urban markets, given that retailing requires little physical infrastructure.

### 4.3 Facilitating new entrants in long distance telecommunications

There is a symbiotic relationship between availability of new infrastructure capacity and the role of retail markets. The more space competitive retailers are allowed in which to compete, the greater their demand for new infrastructure capacity; the more infrastructure capacity comes on line, the more critical the role of retailers becomes in finding users for that capacity. The most profound examples of this can be found in telecommunications markets, where a boom in the construction of new infrastructure has been sparked by the number of competitive retail long distance providers looking to secure long term capacity needs.

**Figure 4. Miles of installed fiber optic lines increased after opening of retail long distance market**



Before the breakup of AT&T, the bulk of long distance services in the US were both sold and provided by AT&T. The opening of long distance markets initially saw the development of two significant long distance competitors, MCI and Sprint. Both scrambled to obtain new customers while at the same time building a network of proprietary infrastructure to assure that they could supply quality service. As Figure 4 shows, the opening of long distance markets corresponded with an explosion in construction of fiber optics lines; today, AT&T controls less than one-third of fiber optic capacity, although it owns substantially more fiber optic capacity now than it did at the time of its breakup.

The next phase of evolution in competitive long distance markets saw the development of specialist firms without internalized vertical linkages. Thus, on the retail side MCI and Sprint were joined by long distance resellers<sup>12</sup> who purchased long distance capacity in bulk for resale but did not own that capacity, while on the wholesale side (the infrastructure construction, operation, and sales aspect of providing long distance) numerous players such as pipeline companies and railroads sprung up to provide fiber optics backbone operations. These latter sets of players were uninterested in direct sales to individual customers, but were interested in building and operating infrastructure. This level of specialization leads to better capital allocation decisions as companies are better able to assess project risks relative to core competencies.

Long distance markets are now reaching a further level of maturity with the development of wholesale markets for fiber optics capacity and markets for wholesale call minutes.<sup>13</sup> Development of these markets adds a level of price transparency, allowing customers to more accurately match their purchases with their needs; at the same time it enables companies with excess infrastructure capacity to attain some additional revenues. The implications of this process are that capacity will be used more efficiently, which will allow companies to delay construction of new capacity.

***Introduction of competition at the retail level in long distance telecommunications markets has resulted in lower prices to consumers, not solely because of the way in which retailers have competed with each other, but also because of changes that have occurred at the wholesale level as a direct result of retail competition. These price declines are related to more efficient use of capital stock and improvements in the ability of competing infrastructure providers to obtain financing, both of which require retail counter-parties.***

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<sup>12</sup> Numerous such firms exist; FCC records show over twenty, many of which own no infrastructure themselves.

<sup>13</sup> The exchange is run by a company called "Band-X", for Bandwidth Exchange. Within a year of the founding of Band-X, minutes on the New York to London route were trading at a 15% discount to published tariff rates. Rates on the exchange today for the route are one third lower than they were when the exchange opened in 1997.

## 4 Policy implications

***Competitive retail markets deliver customers the products and payment options they actually want, at prices lower than they otherwise would have been able to purchase them for.***

The current restructuring of the US electricity industry presents unique opportunities for state regulators to “get it right” the first time when it comes to retail competition. “Getting it right” requires creating a retail market with multiple players who behave competitively, leading to lower total costs to customers and better products and services.

Because the electricity market is being reformed from a regulated monopolistic model to a competitive model, a vibrant retail market will not appear overnight. However, states may preclude vibrant retail markets from evolving by instituting barriers to competitive supplier entry. For example, the California style wholesale-price pass-through model artificially sets the price to compare at a wholesale rate rather than a retail rate. This can provide an almost insurmountable barrier to retail competition. Even when other rules support competitive supplier entry, the lack of support for retail price competition will limit the number of competitive suppliers and the number of choices for customers. To provide a transition to vibrant retail markets, the shopping credit/price to compare must include not only the wholesale cost of generation, but the costs to supply that energy to consumers that are over and above generation and wires charges. Those costs include billing, marketing, regulatory compliance, and customer service, as well as general and administrative costs to support the business.

We have seen repeated examples of the ways in which competition in retail markets – or the lack thereof – has affected consumer welfare. In telecommunications, the opening of long distance markets to new players spawned an infrastructure construction boom and lowered customer tariffs significantly. Airline companies can choose from a greater selection of planes, with a broader array of financing options, partially because deregulation at the retail level not only forced them to compete, but their suppliers as well. This has increased choices for consumers, while contributing to a real decrease in the cost of air travel. Microsoft’s attempts to by-pass retail markets adds validity to the idea that competitive retail markets limit upstream market power.

Creating competitive wholesale generation markets is not enough. Unless there is competition at the retail level, small customers are unlikely to enjoy the full extent of gains from competitive pricing. In time, these adverse effects will trickle upwards, limiting the efficiency of still nascent wholesale markets and affecting large commercial and industrial customers as well. While creating a competitive retail market takes regulatory time and effort – particularly when incumbent utilities are lobbying against it – the long term rewards are great: prices to final consumers that are lower than they otherwise would have been, and provision of products and payment options that customers actually want.

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