

# **An economic perspective on Dodd-Frank regulation of interest rate swaps**

The Over the Counter (“OTC”) derivatives market was at the center of the financial storm in 2007-2008. OTC derivatives trades had reached several hundred trillion dollars in notional value and are still of this magnitude today. Because OTC interest rate swaps (“IR swap”) are difficult to value and track, they were believed to be at the root of the near systemic failure of the banking system. During the financial crisis, no regulator or individual bank was able to assess the full risk of these instruments. Four years later, the OTC IR swap market is still undergoing a fundamental transformation in response to the crisis.

Dodd-Frank legislation was passed in 2010 to overhaul the financial market with the objective of removing or alleviating systemic deficiencies. With respect to OTC IR swaps, Dodd-Frank seeks to lower systemic risk through centralized clearing of trades, better risk management, and trade reporting transparency. Yet despite its size, the IR swap market is small in important respects. Any policy attempting to address a market hundreds of trillions of dollars in size must also take into account that in some ways the swap market is quite nuanced, with some IR swaps trading very thinly and thus potentially substantially disrupted by even finely tuned regulatory policies. As discussed in this article, regulating the IR swap market to reduce systemic risk could unfortunately induce further thinning. This could be harmful to a market that while vast is also intricate and depends on a high degree of customized negotiations between banks, dealers and counterparties.

In Sections 1 and 2, this article describes the overall size of the IR swap market and daily trading activity which can be quite shallow for some types of swaps. In Section 3, the article presents a supply and demand framework that shows how some of Dodd-Frank’s trade and reporting rules could hurt competition. Markets that are competitive are generally characterized by lower prices, lower transaction costs, higher volumes, and more choices. Dodd-Frank could erode each of these dimensions of competition. There are a variety of ways to evaluate the impact of greater transparency on financial markets, one of the goals of Dodd-Frank. This article considers some of the financial and economic ways to evaluate the impact of transparency, with the preliminary judgment that Dodd-Frank in its current form is likely to be either neutral or could undermine trading and market-building activity with respect to IR swaps.

## **1. The benefits of security and derivative price information**

A wealth of information about security and derivatives transactions is in the public domain. Trading volumes and pricing information are rapidly available for a wide range of instruments with varying degrees of risk and return. This is less true for OTC derivatives where much less information about IR swap market activity is publicly available. This made it very difficult to determine the extent the IR swap market contributed to the 2007-08 financial crisis. The first step in evaluating Dodd-Frank’s impact on IR swaps is thus to assess how much trading information is currently available and what new information will become public.



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Before presenting data on IR swap markets, it is helpful to understand some of the commonly mentioned pros and cons of centralized financial market exchanges. Centralized trading and rapid frequent reporting of trade data are usually seen as a sign of mature financial markets. This article agrees with that point of view. In “thick” securities markets where prices are set by impersonal market forces, detailed trade statistics promote deepening of the market. Investors have more information about where, when and how much to trade at various prices. The information lowers the cost of transacting.

By contrast, in thin markets disclosing deal terms can have the opposite effect. This is because statistical data is no longer anonymous. With a small number of trades, parties can potentially make inferences about the investment strategies of others. Thus, trade data for thin markets can have an undesirable, amplified signaling effect revealing the market expectations of some participants. As is shown in the next section, daily trading volumes in IR swaps are in fact quite thin for many classes of swaps.

Another reason disclosing deal terms could be harmful is purely price theoretic: efforts by parties to achieve desirable contract terms can give them an advantage over competitors. If reporting requirements allow competitors to costlessly imitate the valuable deals achieved by the efforts of others, then the gains from trade may be insufficient to cover deal participants’ search and negotiation costs. Specialized deal-making is a way of pricing according to customers’ individual demand schedules. It requires an investment in terms of time and resources. Such economically beneficial deal-making is an important feature of market competition, including the market for interest rate swaps. The supply-demand framework presented in Section 3 describes in precise economic terms how Dodd-Frank reporting requirements could undermine IR swap markets by reducing incentives for individual price and non-price negotiations.

## 2. What is an interest rate swap and how large is the market?

IR swaps emerged for sound financial-economic reasons. When companies and individuals raise funds in debt markets, there is always uncertainty about the path of future interest rates. There are a variety of debt instruments, such as fixed rate versus floating rate, to match borrowers’ and investors’ preferences. Markets and individuals’ conditions change, as will their demands for and willingness to supply various forms of debt. Diagram 1 illustrates a “plain vanilla” IR swap deal.

Diagram 1: Fixed for floating interest swap

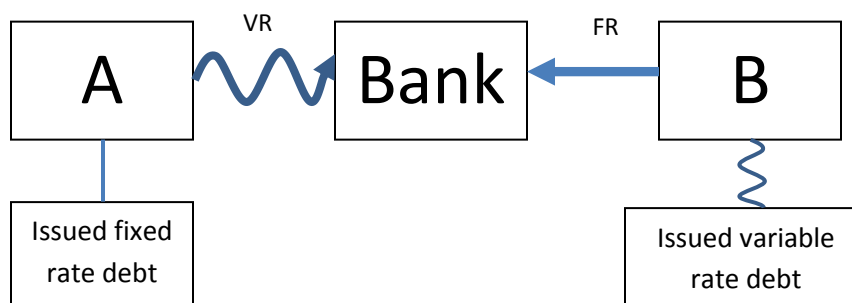
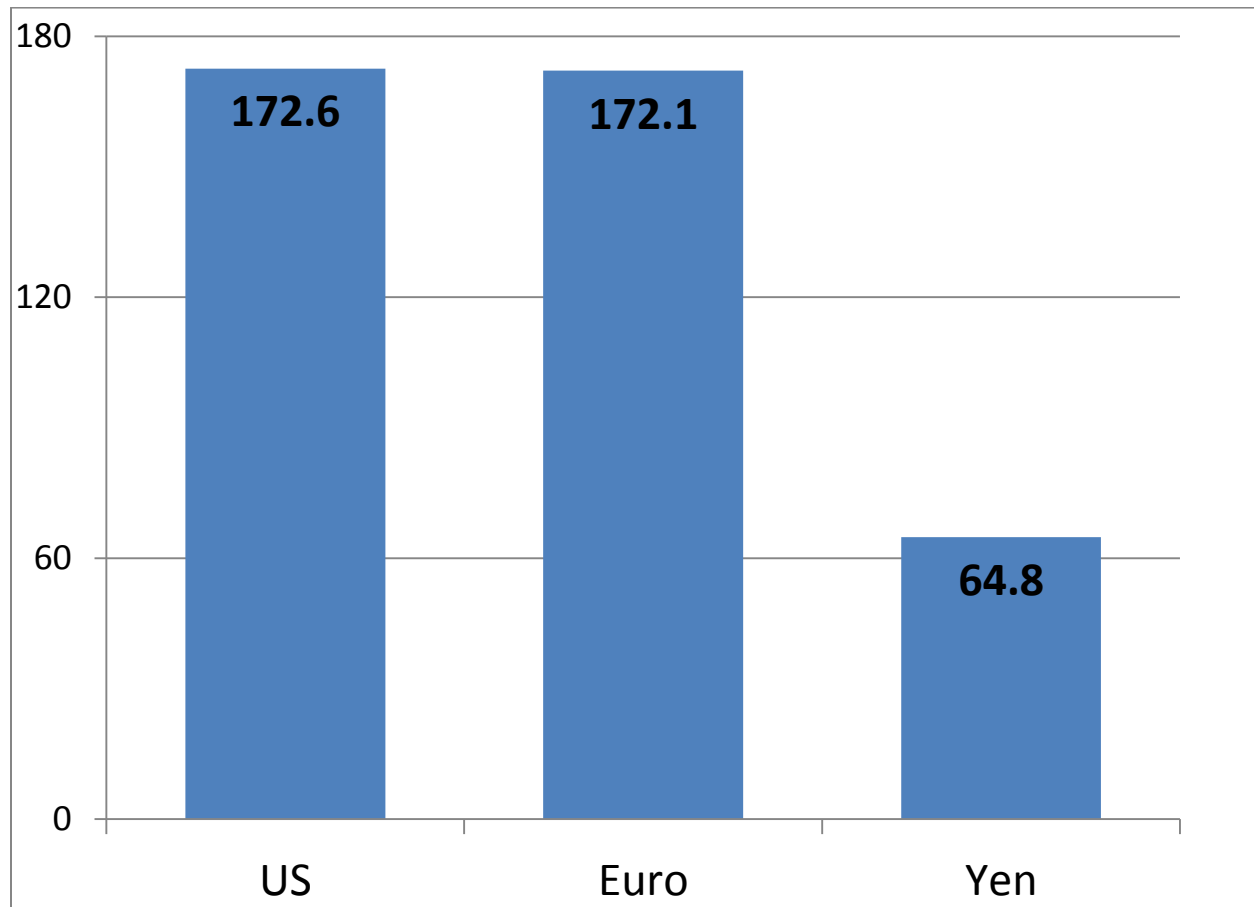




Chart 1

Notional Value of Interest Rate Swap Contracts  
as of April 2012 (Trillions U.S. Dollars)



Sources: Bank for International Settlements and TriOptima

An OTC interest rate swap allows debtors to modify their interest rate schedules without retiring old and issuing new debt. This is a tremendous advantage given the cost and complexity of issuing new debt. Diagram 1 depicts the simplest form of interest rate swap, known as a “plain vanilla” swap, which is an agreement to exchange a variable for a fixed interest rate. Suppose party A originally issued fixed rate debt paying 5 percent and party B issued variable rate debt. Party B might prefer to be on a fixed rate schedule believing that the reference rate (e.g., LIBOR) could rise. As Diagram 1 suggests, the variable rate (“VR”) adopted by party A could rise above or fall below the fixed rate (“FR”) assumed by party B under the swap. The bank standing in between performs what is called a “netting” function so that only the counterparty whose interest obligation exceeds the other’s actually makes a payment.



## Size of the IR swap market

Interest rate swaps cover notional principal on debt contracts in the hundreds of trillions of dollars. Chart 1 above shows the US dollar notional value for US, Euro, and Japanese Yen IR swaps as of April 2012. The US dollar notional value for all countries combined was \$495 trillion. Note that the notional amount is a measure of “stock,” that is, the sum of the principal loan amounts written on all outstanding swap contracts at a point in time. This measure of size gives a sense of the magnitude of the market, but it is important to also know the “flow,” that is, the turnover in swap contracts.<sup>1</sup> Consider an analogy from a commonly reported economic statistic: gross domestic product. GDP is a “flow” measure of the total value of goods and services produced over a given interval, such as quarterly or annual. By contrast, the stock of assets of an economy represents all the assets at a single point in time that are available to produce quarterly GDP.

Table 1

Estimated Number of IR Swap Trades per Day by Type and Tenor \*

	US \$			Euro			Yen		
	0-2	5-10	30+	0-2	5-10	30+	0-2	5-10	30+
Vanilla	137	188	5	131	180	5	60	83	2
OIS	24	<1	<1	48	<1	<1	na	na	na
Basis	5	3	<1	<1	<1	<1	27	14	<1
Other	105	25	4	20	5	1	na	na	na

\*“Other” includes amortizing, zero coupon and compounding interest rate swaps.

Sources: LCH.Clearnet daily trade volumes and TriOptima “trade count” data

One way to measure the flow in the IR swap market is the volume or dollars of swap trades entered into over any defined period, daily, weekly, monthly, etc. We are interested in daily trades, since Dodd-Frank will likely require reporting of daily trade data. Unfortunately, daily trade volumes are available only for aggregated classes of IR swaps. These data can be combined with other information to get a sense of the daily trading volumes for narrower classes of IR swaps that may be reported under Dodd-Frank.<sup>2</sup>

Table 1 provides a rough estimate of daily trading volumes for various types of IR swaps. It is based on actual IR swap contracts tracked at daily frequencies for groups of swap contracts. Combining this information with other public data about narrower groups of swaps (specific maturities and swap types)

<sup>1</sup> Outstanding IR swap contracts are also distinguished in terms of their notional amounts and their market values, the latter being much smaller than the notional value.

<sup>2</sup> The list of data items have not been finalized but the CFTC has proposed 29 fields, and the SEC has proposed 12 fields.



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gives an estimate of daily trades.<sup>3</sup> For example, Table 1 shows that a plain vanilla contract to exchange debt schedules with maturities of 30 years and denominated in Japanese yen had only two contracts traded per day on average.

It has not been decided by policy authorities to what extent prices and other contract features will be reported on a daily basis or rolled up to weekly aggregates. The trading volume for some contracts is, however, quite small, and thus the reporting of even limited information has significant ramifications for investors.

### *Clearinghouse trading under Dodd-Frank*

In light of the very low trading volume for many IR swaps, Dodd-Frank has the potential to greatly alter the dynamics of the market. Dodd-Frank would modify the trading structure of IR swaps by introducing a clearing house. This would enable IR swap trades to be tracked much more comprehensively than they are today. Basically, a centralized clearing house requires swap participants to post collateral, and the clearing house assumes responsibility for default by either party. By contrast, with an OTC transaction structure counterparties assume default risk and potentially could incur higher search and negotiation costs because the market is more decentralized.<sup>4</sup>

The centralized structure of a clearing house helps reduce transaction costs and efficiently allocate risk. How economists and financial scholars measure these impacts is taken up in Section 3 below. In principle, the restructuring of the IR swap market from OTC to clearinghouse would make the IR swap market resemble more competitive, transparent trading regimes. It is not clear how or whether the policy will achieve these objectives. For example, with respect to management risk it is not certain that a clearinghouse will be better able to assess individual and overall risk. It depends obviously on their own risk assessment capabilities. In theory, having access to more comprehensive tracking data in a central location would seem to support an enhanced risk management capability. This debate is not analyzed here.

As noted above, Dodd-Frank could reduce trading activity by imposing reporting requirements that expose strategically sensitive information about dealers' trades. This could be especially problematic for thinly traded derivatives where market observers will be more likely to infer the identity of the dealers and counterparties. Transactors generally do not want to signal their positions. The unique price advantages that individuals gain could also be exposed, and the downside on market functioning is explained in the next section.

### 3. Banking services that promote the IR swap market

As in all markets, the demand for a product depends on its price. Banks and dealers attempt to price their financial products in a way that is profitable and responsive to customer demand. Although the IR

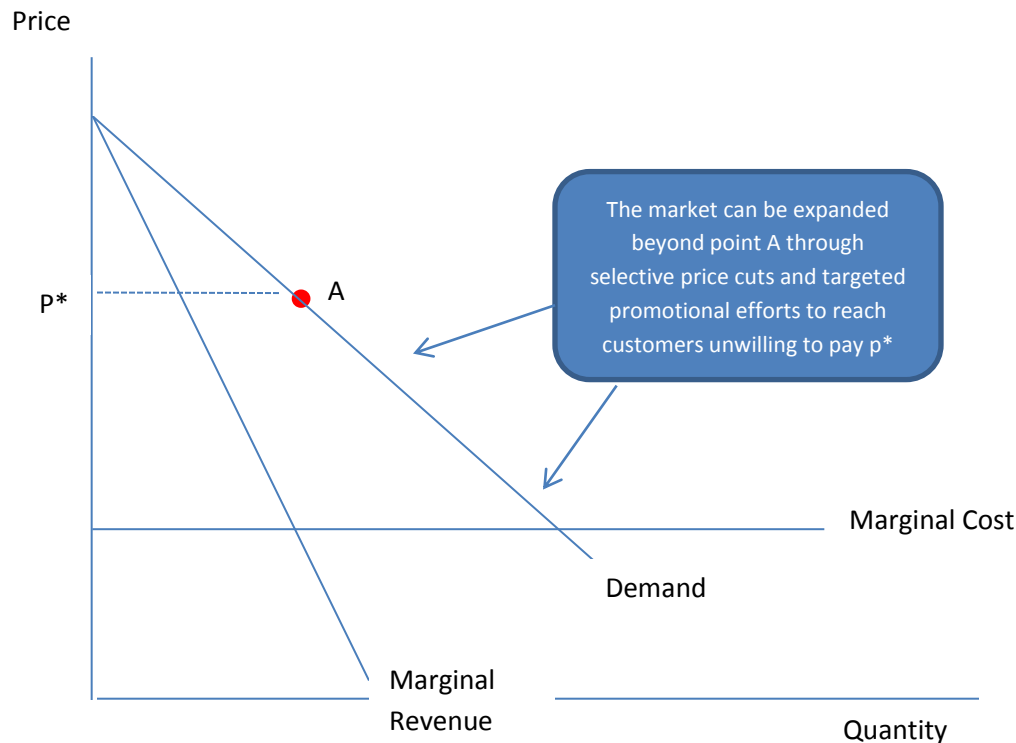
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<sup>3</sup> A detailed description of the estimates shown in the table is available from the author upon request.

<sup>4</sup> Search and negotiation costs are not necessarily higher in OTC trades because the banks and other agents help facilitate the swap deal.



## Diagram 2: Single price profit maximum



swap market is considered a “wholesale” market, it possesses features similar to other markets upstream and downstream. Banks and dealers must promote their products just as retailers do. They can potentially underprice or overprice their products, which, if markets are allowed to function free of impediments, will cause prices to adjust to remove any imbalances – the elimination of excess supply or excess demand. And although IR swap contracts can change quickly in response to changes in macroeconomic and financial sector events, the same laws of supply and demand apply to IR swaps.

Under the law of demand, more customers will purchase a product if its price is lower. At higher prices customers generally buy less or fewer customers enter the market. Holding all other variables constant, (e.g., macro-financial conditions), the law of demand applies to IR swap contracts: at lower prices more customers would tend to find swap contracts appealing. The “price” of a swap transaction is complicated. The price is embodied in the swap contract terms and reflects the amount that one counterparty is willing to pay another to swap cash flows. For example, if there are many debtors interested in switching to fixed rates relative to those paying variable rates, then the “price” of buying fixed rate through a swap will likely increase, in accordance with supply and demand.

The concept of demand where a single profit maximizing price is offered to a group of customers is displayed in Diagram 2. The single optimal price is denoted “ $p^*$ .” If we assume that a bank or dealer is acting as an intermediary, then the bank’s demand curve is a “derived demand” viewed from whichever



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side of the deal it stands with respect to the counterparty.<sup>5</sup> The bank or dealer faces a downward sloping demand curve (derived from counterparty demand). To the extent it can differentiate its products and services from others and because of the varying preferences by counterparties for IR swaps, the demand curve may be flatter or steeper.<sup>6</sup>

Of course, the full price of the swap contract includes other components: the cost of arranging buyers and sellers (often measured as the bid-ask spread); the cost of assessing the need for collateral posted by the counterparties; the drafting of the contract terms, and others. These costs, referred to by economists as “transaction costs,” are not unique to swap contracts. Transaction costs have been determined by economists to be a major component of the overall economy, as high as 40 percent of GDP.<sup>7</sup> In the upstream goods market (e.g., manufacturers) as well as the downstream market (e.g., retailers), selling and promotional efforts constitute a large fraction of the cost of transacting. Customers must be targeted and informed about the product, and negotiations for mutually advantageous terms must be pursued. Similarly, banks and dealers must inform customers about the value of derivatives and undertake complex negotiations. Transaction costs are a normal part of all economic activity.

Returning to Diagram 2, we can see how supply and demand is a useful tool for broadening the analysis of IR swap transactions. First, customers along the demand curve to the left of point A pay a price  $p^*$  (as well as a bid-ask spread to the bank). This means that some customers can get a windfall on the deal since they are willing to pay a price higher than  $p^*$ . This is known as “consumer surplus” in economics jargon.

Second, customers to the right of point A who are not willing to pay  $p^*$  can be turned into potential customers through promotional and market-building activities. The way this can occur is through targeted price cuts and other means to reach potential customers. Some specific ways that banks accomplish this are discussed below. The implication for evaluating the impact of Dodd-Frank is that the analysis must consider the policy impact on bid-ask spreads (a conventional financial metric of competition) as well as other market promotional activities that intensify competition. There is a tension, however, between the economic view of transaction costs and the financial view of transaction costs relevant to assessing market performance. This tension must be clarified, and if possible, resolved in order to present a way to assess the full market impact of Dodd-Frank using finance and economics.

Recent financial studies that have examined the impact of financial market transparency have shown that transparency tends to reduce bid-ask spreads.<sup>8</sup> This is an important empirical finding. It suggests

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<sup>5</sup> The bank itself could be a counterparty, in which case it faces the buyer directly.

<sup>6</sup> In this framework, the bank is assumed to capture a portion of the value of the swap to counterparties. This is accomplished through the bid-ask spread and other means at their disposal to adjust prices.

<sup>7</sup> See Ning Wang “Measuring transaction costs: an incomplete survey,” Ronald Coase Institute working paper, #2 February 2003.

<sup>8</sup> For example, see Bessembinder, Hendrik and William Maxwell, “Markets: Transparency and the corporate bond market,” *Journal of Economic Perspectives*, Spring 2008, vol. 22, No. 2, pp. 217 – 234. For a contrasting view that transparency could reduce liquidity, see “Block trade reporting for over-the-counter derivatives markets,” report



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that transparency lowers the cost of transacting. With lower transaction costs, customers and sellers can more efficiently arrange mutually advantageous exchanges.

What is also interesting is that these studies have found a tendency for a reduction in the “quality” of services by banks and dealers as a result of transparency. For example, Bessembinder and Maxwell found that corporate bond dealers were less willing to provide customers with support services such as customized research and market analysis once bid-ask spreads declined.<sup>9</sup> Although it may be difficult to quantify the value of these ancillary services, they presumably benefit customers in many ways since some customers have less financial analysis capabilities than others. The decline in services following transparency is therefore an important puzzle. Their absence could signal more than just an inconvenient withdrawal of a service to potential swap customers. Conversely, it may be that in the wake of greater transparency, customers require less information from dealers.

To understand the economic significance of this interesting finding, the demand curve in Diagram 2 shows what can happen in the presence of special support services. Customers to the right of point A can potentially be drawn into the market through such services, which can be a way to promote IR swaps to certain customer segments. That is, the research and market analysis services (beyond trade execution) that many G-14 banks and other intermediaries provide can have the economically equivalent effect of a special price discount. This is a common scheme used by retailers.<sup>10</sup>

Essentially, the “special service” makes the price paid by some customers effectively lower because it reduces their cost of transacting. Customers who need more “free” information about swaps and how swaps fit into their business receive a tangible benefit from these types of services. Even though the services may be available to all, they appeal primarily to those potential customers who require extra assistance about the product: the potential customers to the right of point A in Diagram 2. This type of “special service” assistance is a common promotional scheme and is a way to segment customers in terms of their price sensitivity. Importantly for the banks’ profitability, it is a way to offer effective price cuts to select groups of customers without cutting price to other customers already willing to pay  $p^*$ . If transparency erodes banks’ and dealers’ profitability by cutting the bid-ask spread, then banks may have less incentive to offer these services.

The promotional services that banks offer are analogous to the informative displays and helpful staff at retail stores which lower transaction costs to shoppers. Such services are an important market-building activity. They reflect part of the market “quality” dimension which financial studies have shown can be eroded in conjunction with a decline in spreads. Thus, bid-ask spreads, while an important indicia of competition, are a single dimension of competition that needs to be analyzed in the context of the other transaction cost activities undertaken by banks and dealers. The market for IR swaps, and wholesale/retailing generally, benefits not only from selective price discounts negotiated with individual

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prepared by ISDA, January 18, 2011; see also Madhavan, A., Porder, D., and Weaver, D. “Should securities markets be transparent,” *Journal of Financial Markets*, 2005(8).

<sup>9</sup> See Bessembinder and Maxwell, op cit, p. 232.

<sup>10</sup> Telser, Lester G. “Why Should Manufacturers Want Fair Trade?” *Journal of Law and Economics*, 1960, 3, pp. 86-105.





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customers to the right of point A in Diagram 2, but also from the many types of targeted non-price discounts achieved through special promotional services that draw customers into the market.

In sum, IR swap market competition and the impact of Dodd-Frank reporting requirements can fruitfully be studied in many ways, including the bid-ask spread and market-building activities by banks and dealers. The websites of the major IR swap dealers advertise a variety of “promotional services” that give information to prospective clients beyond trade execution support. Some of these services no doubt come with a fee, but they are likely also structured to help the banks and dealers better understand the different customer types along the demand curve. Their absence could potentially occur under Dodd-Frank and erode the quality of the IR swap market.

As dealers and banks provide useful valuation, forecasting and other consulting services to potential counterparties, they in turn help potential customers understand how swaps and complex derivatives fit with their financing needs.<sup>11</sup> These are extremely important market-building activities that occur outside of the context of bid-ask spreads charged to customers already participating in the market. It would be detrimental to the derivatives market if Dodd-Frank deters banks and others from offering these valuable, pro-competitive price and non-price forms of discounts, not to mention the possibility that banks may be forced to charge higher bid-ask spreads if their profits are eroded elsewhere by regulatory restrictions. The outcome of a more transparent financial market depends on whether the policy undermines incentives to become more competitive through its impact on price in the short-run and its impact on market growth in the long-run.

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<sup>11</sup> The websites of many large banks describe a variety of derivatives services including research, forecasting, consulting and valuation support, as well as trading platform and execution services. Two examples are BNP Paribas’ Corporate and Investment division and Barclays’ Global Markets division.