



## Location and lease intensity

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### ABSTRACT

U.S. firms lease assets extensively. We find that, during 1980–2011, the average U.S. firm has a lease intensity of about 40%. Or, the average firm has present and future (up to five years) rent commitments equal to 16.6% of their total assets. We investigate whether agency costs between the lessor and the lessee affect the lease intensity of firms. To do so, we examine the impact of firms' location on the use of operating leases. The main idea of our paper is that, because obtaining information and monitoring is costly for potential lessors, especially when a lessee is relatively far away from financial centers, rural firms are less likely to use operating leases. Consistent with this hypothesis, we show that rural firms tend to have lower lease intensities than similar urban and small city firms. In addition, we find that firms with higher levels of debt capacity lease less and firms that face more financial constraint lease more. Our findings are robust to industry and lease maturity controls and consistent with the existence of an agency problem associated with leasing.

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## 1. Introduction

In the U.S., operating leases are important. We find that, during 1980–2011, the average Compustat firm had a yearly lease intensity of about 40% per year.<sup>2</sup> Said differently, the average firm had present and future (up to five years) rent commitments of about \$98 million, or 16.6% of their total assets in a given year. We are not the first to document the importance of leasing. For example, Beatty et al. (2010) state that leasing accounts for about one-third of new equipment investment and Eisfeldt and Rampini (2009) write that leasing is comparable in importance to long-term debt. They find that the fraction of capital that firms lease is about 16%, similar to their long-term debt ratio of 19%. Furthermore, Graham et al. (1998) find that operating leases, capital leases, and debt are 43%, 6%, and 52% of fixed claims and Gavazza (2010) notes that 80% of U.S. companies lease capital equipment. Hence, it is surprising that “leasing has been essentially ignored in the theoretical and empirical literature” (Eisfeldt and Rampini, 2009, p. 1624).

Historically, researchers have focused on tax explanations for leasing (e.g., Myers et al., 1976; Wolfson, 1985). However, other explanations for leasing exist. For example, there is literature that investigates leasing in relation to market power (e.g., Hendel and Lizzeri, 1999) and financing constraints (i.e., Sharpe and Nguyen, 1995).<sup>3</sup> Recently, researchers have started to focus on the role that agency problems may play in determining lease decisions. For example, Eisfeldt and Rampini (2009) suggest that potential lessees will weigh the benefits of increased debt capacity associated with leasing with the costs due to the agency problems that arise from leasing. Simply said, there arises an agency problem between the lessee and the lessor because of the separation of ownership

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<sup>2</sup> In our paper, lease intensity is defined as the sum of rental expense and the present value of rental commitments for the next five years and after divided by the sum of rental expense, present value of rental commitments for the next five years and after, and property, plant, and equipment.

<sup>3</sup> In Section 2, we review the existing lease literature in more detail.

and control of the leased asset(s) and, in our paper, we test whether this agency problem has an effect on the lease intensity of firms. We do so by examining the leasing activities of a large number of firms in relation to their geographic location, which proxies for potential agency costs.<sup>4</sup> Specifically, we hypothesize that firms that are located further away from financial centers (i.e., rural firms) tend to lease less. Since urban firms are located in or close to large cities, where a lessor is more likely to be located, obtaining information about and monitoring the firm should be easier for lessors.<sup>5</sup> Consistent with the idea of the sensitivity to use and maintenance decisions (Smith and Wakeman, 1985), the probability that leased assets will be abused and less well maintained should be lower for urban firms, relative to rural firms. In other words, the effect of location on leases should be most pronounced for rural firms, less pronounced for urban firms, and somewhere in between for small city firms. This suggests that it is more difficult for lessors to forecast asset abuse in rural firms, resulting in more frequent deposit and penalty provisions in lease contracts and high rental expenses requirements. As a result, rural firms may find leasing a less attractive source of financing when compared to their urban and small city counterparts. Hence, rural firms are expected to have lower lease intensity.

Using a sample of U.S. firms from the Compustat database over the period of 1980–2011, we find strong empirical support for this hypothesis. In univariate and multivariate analyses, we show that rural firms tend to have a lower lease intensity, compared to small city and urban firms. We classify firms as rural, small city, or urban based on the five-digit ZIP codes of their headquarters.<sup>6</sup> After controlling for a host of variables that the existing literature shows to have an effect on lease intensity, as well as controlling for industry, time fixed effects, and lease maturity, our estimates are highly significant.<sup>7</sup> Economically, rural firms have a leasing intensity that is 9.6% lower than urban firms (34.6% for rural firms versus 44.2% for urban firms) and, based on our regression estimates, this equates to a difference of about \$50 million in leased assets between rural and urban firms (or 3.4% (14.3%) of total assets (long-term debt)). Our results are robust to alternative measures of lease intensity, as well. Following Beatty et al. (2010) and Sharpe and Nguyen (1995), we estimate our base model using two different measures of lease intensity that include capital leases and find very similar results.

In additional analyses, we also show that rural firms with a higher debt capacity have a lower lease intensity when compared to urban firms. Jaffee and Russell (1976) and Stiglitz and Weiss (1981) show that adverse selection problems can lead to a higher cost of debt. One way to reduce this external financing cost and, hence, increase debt capacity is to use assets as collateral (i.e., increase tangible assets). Leasing theory also predicts that firms can reduce external financing costs by leasing assets. As higher debt capacity firms already have lower costs of external financing, their dependence on leases should be lower. Sharpe and Nguyen (1995), Eisfeldt and Rampini (2009), and Beatty et al. (2010) suggest that financially constrained firms are more likely to lease fixed capital. Therefore, we also examine whether rural firms with high financial constraints lease more than do typical unconstrained firms. Consistent with previous studies, our findings suggest that rural firms with higher financial constraints have higher lease intensity. One explanation for this finding is that, even while facing a geographical agency problem, rural firms still find leasing a more attractive financing source.

Our paper adds to two separate streams of literature. First, and foremost, it adds to the literature on leasing by showing that location matters in regards to leasing decisions. Leasing is less attractive for firms that are rural. This suggests that agency costs do indeed lower the use of leases, which is consistent with the idea that potential lessees weigh the benefits of increased debt capacity associated with leasing with the costs due to the agency problems that arises from leasing. Second, we contribute to the literature on geography and location by showing that location affects leasing decisions of firms. Specifically, our paper shows that remoteness can also exacerbate agency problems in situations where there is a specific underlying asset, which is subject to the separation of ownership: an operating lease. As a matter of fact, because of its separation of ownership and control, leasing may be especially susceptible to this agency problem, and especially so in remotely located firms.

The remainder of this paper is organized as follows. In Section 2, we briefly discuss the relevant literature and develop our main hypothesis. The sample selection criteria and data description are presented in Section 3. We present our research design and main empirical findings in Section 4. In Section 5, we show some additional analysis in order to further relate our findings with existing studies. It also includes our robustness tests. Section 6 concludes the paper.

## 2. Previous research and hypothesis

### 2.1. Lease intensity

Past studies provide several explanations for why firms lease. The literature has mainly focused on tax explanations for leasing. Myers et al. (1976) theoretically show that differences in tax rates make it beneficial for low tax firms to lease. Wolfson (1985)

<sup>4</sup> Geographical distance imposes a costly information barrier that makes it difficult to obtain firm- (or asset-) specific information and monitor. It has been well established that investors (both institutional and retail) prefer stocks of firms nearby (e.g., Coval and Moskowitz, 1999; Grinblatt and Keloharju, 2001; Huberman, 2001; Ivković and Weisbenner, 2005; Loughran and Schultz, 2004; Seasholes and Zhu, 2010) possibly due to monitoring and informational advantages. Other studies also examine the impact of location on financial issues. For example, Francis et al. (2007) and Loughran and Schultz (2005) document that the costs of equity and debt are higher when firms are located in rural areas. Malloy (2005) shows that analyst forecasts are less accurate for distantly located firms, and Kang and Kim (2008) show that block acquirers are more likely to acquire firms nearby and that the performance of the acquisition is better because the acquirer can take part in the corporate governance activities of the acquired firm. In short, the basic tenet of this literature is that distance and location may have a substantial effect on the amount of information that is available to as well as the monitoring ability of capital providers.

<sup>5</sup> In Section 3.2, we provide evidence that suggests that the majority of leasing offices (of the three largest U.S. lessors) are indeed located in urban areas.

<sup>6</sup> Other studies that use the same classification are Coval and Moskowitz (1999, 2001), Loughran and Schultz (2005), Seasholes and Zhu (2010), Ivković and Weisbenner (2005), and Malloy (2005).

<sup>7</sup> We also employ an instrumental variable approach confirming our main results.

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