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Comment on Burgess and Zerbe: On Bank Market Power and the Social Discount Rate

Per-Olov Johansson, *Stockholm School of Economics*
Bengt Kriström, *Center for Environmental and Resource Economics, SLU and Umeå University*

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Comment on Burgess and Zerbe: On Bank Market Power and the Social Discount Rate

Per-Olov Johansson and Bengt Kriström

Abstract

In this note we discuss how to estimate the social discount rate when banks have market power. Some data from Sweden are used to illustrate the approach. If other investments are crowded out, the implied social discount rate is around 7 percent, i.e. more or less equal to the one suggested by Burgess and Zerbe (2011) for the U.S. but similar to those often used in the EU (3-4 percent) if private consumption is crowded out by the considered investment.

KEYWORDS: social discount rate, market power, social opportunity cost of capital

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In a recent article Burgess and Zerbe (2011) estimate social discount rates for the U.S. They suggest that the social opportunity cost (SOC) approach is superior to other approaches. In this note we point to another dimension of this approach, namely market power. Financial markets are often dominated by a few large firms. It seems likely that these large players have and exploit market power. If so, they earn a profit on marginal transactions; i.e., there is a markup on their own marginal costs. At least a part of the difference between discount rates used by private firms and proposed societal ones might be explained by this kind of market imperfection. It seems reasonable to claim that any present value (marginal) gain of profits of financial agents should be added to a project's present value net gain (i.e. its present value benefits less present value costs).

A recent study analyzes market power of Swedish banks. It estimates the Lerner index for Swedish banks to be about 22 percent for the period 1996-2002; see Sjöberg (2007) for details. In other words, the mark-up, i.e. the difference between price and marginal cost, over price ratio is about 0.22. The same study estimates a Translog cost function for the banking industry with three variable inputs (funds, labor and physical capital including depreciation). This cost function produces a real marginal lending cost equal to about 5.5 percent; see table 6.3 in Sjöberg (2007). This might overestimate the true *short-run* marginal cost since all inputs including labor and physical capital are variable.[1] Recalculating the marginal cost holding real capital and labor constant produces a marginal cost of 4 percent; we have not had the possibility to reestimate the regression equations.[2]

[1] For example, taking a Cobb-Douglas cost function with two inputs, the short run MC intersects the long run MC from below at the level of production for which the fixed input is cost minimizing; this holds regardless of whether increasing, constant, or decreasing returns to scale is assumed. Thus if there is slack the short run MC is below its long run counterpart.

[2] Short-run marginal cost is estimated as

$$\frac{dc}{dq} = \frac{e^{\ln c}}{q} \cdot [s_0 + s_1 \cdot \ln(q) + s_2 \cdot \ln(\omega_1)] =$$

$$= \frac{1276}{24823} \cdot (0.6134 - 0.00059 \cdot \ln(24823) - 0.04658 \cdot \ln(0.0299) = 0.0396,$$

where c is total cost, q is total output (total assets), ω_1 denotes input cost of funds, s_0, s_1, and s_2 are estimated coefficients; see tables 5.1, 5.2 and 6.1 in Sjöberg (2007). If labor is considered variable too, dc/dq increases to 0.0417. The study's average input price of funds might be a reasonable lower bound for the short-run marginal cost. If so dc/dq is at least 0.03 for the considered period; see ω_1 in Sjöberg's table 5.2.

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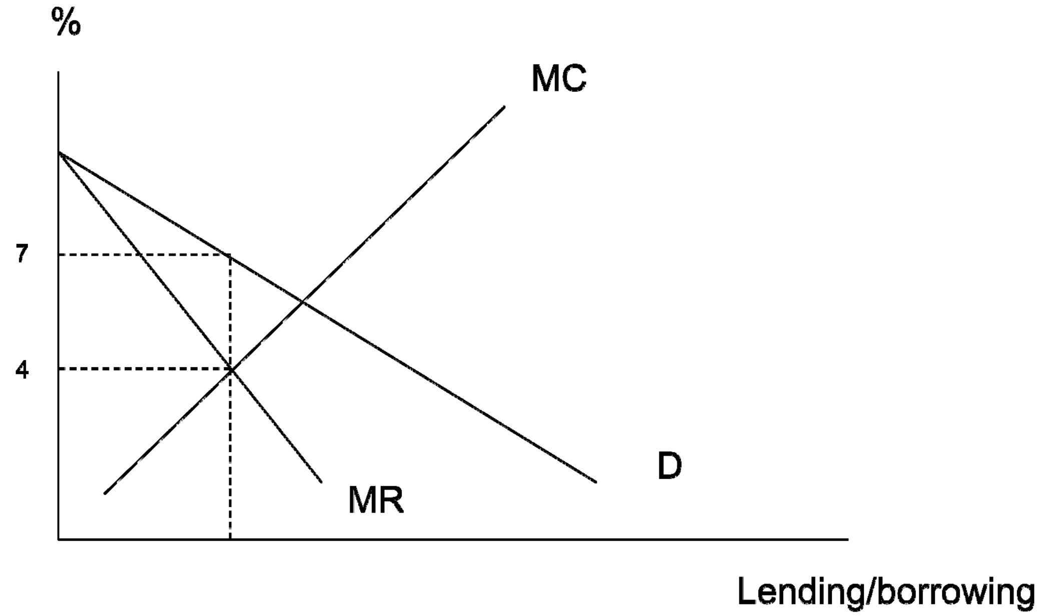

Figure 1. Illustration of a bank monopoly, where D is demand, MR is marginal revenue, and MC is marginal cost.

In Figure 1 we provide a simplified illustration assuming that there is only one bank; the 4 major Swedish banks account for around 75 percent of the market. Using the Lerner index the uniform lending rate is estimated to be 7 percent assuming uniform monopoly pricing.[3] As stated above, the short run marginal (borrowing) cost is estimated to be 4 percent. A small project causes a marginal shift of the demand curve to the right. Even though the project must pay at least 7 percent to get funding, the marginal cost of providing the funds is 4 percent, all other things equal. Therefore this analysis suggests that for a marginal project in Sweden we should discount resources at 4 percent.[4] On the other hand, a larger project might force up the borrowing and lending rates significantly and hence crowd out consumption (stimulate savings) as well as other projects/investments. The part of the resources that are generated through new savings should roughly speaking be valued at 4+ percent while crowded out investments should be valued at 7+ percent. Moreover, if the MC-curve in Figure 1 is very steep even a small project crowds out other investments. In such cases it

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[3] According to Sjöberg (2007) the Lerner index is $(r^L - 5.5)/r^L \approx 0.22$, where $r^L \approx 7.1$ (percent) is the lending rate and 5.5 (percent) is the long-run MC estimated by Sjöberg (2007).

[4] Strictly speaking, this holds only if the marginal cost curve is more or less horizontal in a small vicinity of the initial optimum as might be the case for a small open economy.

seems reasonable to use a discount rate close to 7 percent. This rate is in the interval (6-8 percent) suggested by Burgess and Zerbe (2011) for the U.S. It might also be noted that the European Commission's Directorate General Regional Policy has suggested a 3.5 percent social discount rate for most member states including Sweden when evaluating infrastructure investments; see European Commission (2008) for details of the social time preference (STP) approach typically used in Europe and estimates for different countries.

Productivity has probably increased since the early years of this century, the input price of funds has fallen, and the banking industry is subject to much more intense international competition than 10 years ago. These facts imply that the real borrowing cost probably has fallen in comparison to the average for the period covered by Sjöberg (2007), ignoring here the likely short-run increase caused by the current economic crisis. Adding the consequences of arbitrage and other possible "distortions" in financial markets we might—but don't need to—end up somewhere around 3 percent (for a small or marginal project that crowds out consumption). In any case our point is that firms' high discount rates, to some extent, reflect market imperfections in financial markets; according to the data used in this note firms have to pay at least 7 percent when they borrow from banks while banks' marginal borrowing costs are considerably lower.

The government does not necessarily borrow from banks in the way suggested above. Still, those who lend to the government divert their savings from the bank market considered here. In this sense the demand curve in Figure 1 might shift as a response to a new public sector project. Therefore the difference between the market price (lending rate) and the real marginal cost (borrowing cost) is of relevance for cost-benefit analysis. Still, one could conceive more complex market structures where the outcome is different from the one outlined here.

What is needed to fully resolve the discounting issues is an intertemporal model with different agents having different attitudes to risk and with many different financial instruments and agents and where some agents have market power. Such a model could be used to derive more general evaluation rules than those presented in this note. However, to the best of our knowledge there are no such general models available so their properties are largely unknown. Instead there are different simplified approaches to estimate the social opportunity cost of capital.[5] For recent surveys as well as extensions the reader is referred to Burgess (2008) and Burgess and Zerbe (2011).

[5] Under very restrictive assumptions the social opportunity cost of capital and the social rate of time preference coincide; see Burgess (2008) for details. In such rare cases either concept can be used to define the social discount rate.

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