

# Resolving the puzzle of the underissuance of national bank notes<sup>☆</sup>

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## Abstract

Much of the puzzle of underissuance of national bank notes can be resolved for the period 1880–1900 (the period when detailed, bank-level data are available) by disaggregating, taking account of regulatory limits, and considering differences in banks' opportunity costs cross-sectionally and over time. Banks with poor lending opportunities issued more, within regulatory limits. Banks tended to issue more when bond yields (the backing for notes) were high relative to lending opportunities. The profitability of note issuance was insufficient to attract entrants primarily or mainly for the purpose of note issuance. The observed lack of a general relationship between note issuance and reserve demand is inconsistent with the view that redemption costs from note issuance explain low note issuance in general. However, some variation in the propensities of urban banks to issue notes is associated with variation in reserve demand costs associated with the note issues of those banks. Generally, however, note issuance enjoyed economies of scope with deposit banking, including reduced costs of reserve requirements.

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## 1. Introduction

During the Civil War, the federal government began to charter national banks. These banks enjoyed the privilege of being licensed to issue national bank notes, which were default-risk-free liabilities of the banks, backed 111% by U.S. Treasury bonds deposited by issuing banks at the U.S. Treasury.<sup>3</sup> The creation of these

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<sup>3</sup> After 1874, banks also had to deposit a 5% minimum cash redemption fund at the Treasury in addition to these bonds.

new banks, combined with a 10% annual tax on state bank note issues, soon resulted in the supplanting of state banks' notes by the new national bank notes.

Scholars have long puzzled over the observation that national banks did not take greater advantage of the authority to issue notes. The aggregate supply of notes never reached its maximum permissible level, despite calculations measuring the profitability of allocating capital toward bank note supply collateralized by bonds (e.g., as derived by Cagan, 1965), indicating that national bank note issuance was more profitable than the typical profit earned by allocating bank capital toward lending funded by a combination of deposits and capital. Friedman and Schwartz (1963, p. 23) wrote:

Before 1890 the amount outstanding ranged around 20% of the possible maximum, by 1900 it had risen to about 28%, and by World War I to about 80%. The maximum was in fact approached only in the twenties, when for the first time U.S. bonds deposited to secure circulation and government deposits (which also required such security) nearly equaled the total of eligible bonds. Before 1905, the capital stock of national banks set narrower limits to their maximum possible note issue than did the total of eligible bonds, but the actual issue did not approach this lower limit either. Thereafter, the capital stock of national banks exceeded the total of eligible bonds and hence was not the effective limit on note issue. Yet, despite the failure to use fully the possibilities of note issue, the published market prices of government bonds bearing the circulation privilege were apparently always low enough to make note issue profitable except in the years 1884–1891. The fraction of the maximum issued fluctuated with the profitability of issue, but the fraction was throughout lower than might have been expected. We have no explanation for this puzzle.

Friedman and Schwartz (1963) and Cagan (1965) argued that profits from note issue were large on the margin, because bond issues to back note issues remained cheap and because banks could easily leverage their capital devoted to those bond purchases.<sup>4</sup> In their discussions of potential constraints on bank note issues, they pointed to the more than adequate *aggregate* supply of bonds, and while they recognized that regulations constrained bank note issuing relative to bank capital, they argued that bank capital was not a constraint because its *aggregate* amount exceeded the amount required for increased note issues. Cagan and Schwartz (1991) showed that the apparent excessive profitability of bank note issuance increased in the 20th century.

The story typically advanced to explain low issuance of national bank notes conjectures hidden transacting costs faced by issuers. Authors such as Bell (1912), Cagan (1965), Goodhart (1965), Cagan and Schwartz (1991), Duggar and Rost (1969), Champ et al. (1992), and Wallace and Zhu (2004) have pointed to the possibility that redemption costs may have been large, and these hidden costs may explain bankers' reluctance to issue despite the seeming profitability from expanding the supply of notes. Champ et al. (1992) argue that banks had an incentive to return national bank notes to their issuing banks (or to the Treasury) because national bank notes were not as good as greenbacks for purposes of satisfying national banks' legal reserve requirements. They plot "redemptions" at the Treasury as a fraction of outstanding notes, and show that annual redemptions averaged about half of outstanding notes. This is the primary evidence offered in favor of their view that national banks were unwilling to hold each other's notes, and routinely returned each other's notes either to the Treasury or to the issuing banks, which imposed redemption costs on issuers.

But the redemption evidence cited in Champ et al. (1992) suffers from some problems of interpretation. Much of the Treasury redemptions do not represent redemption demands by other banks to redeem notes because the notes were inferior to greenbacks as legal reserves. When one considers the stated causes of the reported redemption flows, it is not clear whether there were large redemption costs associated with those flows. The Annual Report of the Comptroller for 1890, for example, describes and quantifies the causes of the \$67 million in "redemptions" that were received at the U.S. Treasury Redemption Agency for the period

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<sup>4</sup> Cagan and Schwartz (1991) point out that we can restate the puzzle of underissuance as the puzzling absence of a large premium on U.S. Treasury bonds (i.e., lower bond yields). High profits from note issuing should have led national banks to bid up the price of bonds (in order to satisfy legal backing requirements for note issues), which should have raised the premium on bonds and, thus, eliminated allegedly excess profits.

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