

## 2. Income Sources and Effects of Medieval Emergency Debasements\*

▼ **ABSTRACT** The paper is about how minting authorities in the Middle Ages could increase seigniorage by undertaking relatively fast debasements (decreasing the silver content) of the coinage. The paper analyses which mechanisms and incentives are created by the authorities for people to hand in bullion and old/foreign coins for re-minting and thereby increase the seigniorage. Two main mechanisms are identified. First, in the early phase of an emergency debasement cycle, there are price-lags between silver price and consumer prices because the latter prices are 'rigid'. This provides incentives for people to hand in bullion and foreign coins for minting. Second, in the later phase of a debasement cycle, both good and bad coins will circulate simultaneously. If ordinary people cannot see the difference between good (high silver content) and bad (low silver content) coins, experts (such as silversmiths) can collect good coins and hand them in for re-minting and make a profit through arbitrage. I also analyse what happens at the end of a debasement cycle. Theories are supported by empirical data from France and Sweden. Finally, analysis is made of which groups in society are winners and losers from emergency debasements.


▼ **KEYWORDS** emergency debasement, inflation, price-lags, asymmetric information, arbitrage

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## Introduction

Debasement means that new coins hold a lower intrinsic value than older ones, although they have the same face value. This is accomplished by decreasing either the weight, the fineness, or both. Debasement may occur for monetary or fiscal reasons.<sup>1</sup> Debasement as a fiscal policy often occurred in times of war or epidemic when finances were volatile and in disarray (Chilosi and Volckart 2010, 2–3, Edvinsson 2011, 168).<sup>2</sup> In the Middle Ages, the royal authorities held several sources of revenue.<sup>3</sup> An important source of royal revenue was the flexible seigniorage tax received from minting coins. In periods of fiscal crisis, coinage could be debased without the need for negotiation to raise inflation taxes.<sup>4</sup> Furthermore, the collection costs of seigniorage revenues were low. Empirical studies from medieval France and Sweden show that seigniorage revenues could increase substantially during debasement cycles.<sup>5</sup>

The purpose of this paper is to analyse how emergency debasements work in practice. There are three different issues of specific interest: 1) how seigniorage is raised from debasements; 2) which conditions must be fulfilled for debasements to generate seigniorage; and 3) the consequences of debasements, for example, on

inflation and trade, as well as which groups in society had to bear the tax burden.

## Sources of Revenue from Debasement

The public could detect changes in the weight of coins relatively easily. However, few were able to identify debasements in fineness. Here the expert assistance of gold and silversmiths or experienced merchants was required (Gandal and Sussman 1997, 443–44). There were thus large transaction costs involved for people to detect debasements in fineness. Unsurprisingly, debasement in fineness was far more common than alterations of weight in the Middle Ages.

The success of debasement as a fiscal policy depended on differences between actual and expected inflation. In steady state equilibrium with full information, the inflation rate would equal the debasement rate. However, there are several reasons to believe that there was a lag in inflation in the Middle Ages (Sussman 1993, 53). Firstly, many feudal contracts and rents, as well as wages, were fixed in nominal terms, slowing down inflation. Secondly, as mentioned above, detecting debasement through fineness was difficult and costly. Thirdly, information was released on neither the debasement nor the inflation rate. Only a higher mint price — to give incentives to arbitrage re-minting — would indicate a debasement, a reduction in seigniorage, or both. Finally, by reducing both the weight and fineness of coins, the authorities could try to confuse the public about the true intrinsic value of the coins. By creating lags in acquiring the correct values of debasement, the expected inflation became lower.

Increased revenues from debasements originated from two sources (Sussman 1993, 52–54). First, by lowering the fineness in the coins, the difference between the mint equivalent ( $L$ ) and the mint price ( $Q$ ) — i.e., the mint charges ( $S$ ) — increased.<sup>6</sup> Since mint charges ( $S$ ) cover the production costs of minting, the residual is the seigniorage. The relationship between the mint equivalent, mint price, and mint charges is shown by this equation:  $Q = L - S$ .<sup>7</sup> For a successful debasement, it is necessary to keep  $L$  and  $S$  secret from the public — only  $Q$  was announced.

Second, higher revenues were also based on the increased minting of fresh coins from bullion and the increased re-minting of older bad coins (Sussman 1993, 51–52). When debasement started, the money supply increased (more coins from a given weight of bullion). Often, the minting authority already increased the mint

1 A monetary reason arises in expanding economies, where there is likely an excess demand for money and an inelastic supply of bullion. Debasement of coins will then help with meeting the excess demand for money. By lowering the fineness, more coins could be struck from a given amount of bullion (Chilosi and Volckart 2010, 3–4). A similar issue occurs if a shortage of bullion (e.g., due to exhaustion of silver mines) causes the relative price of bullion to increase. The purchasing power of standard coins will then rise, resulting in deflation of consumer product prices. The standard nominal coin (penny) might then get too-high a face value for daily transactions. Another monetary issue occurs when coins are valid for long periods. Wear and tear will then reduce the intrinsic value of old coins, but they have the same face value as new ones. Old coins will then crowd out newly issued coins (Gresham's law). Stepwise debasement of new coins would counter this process and equalize the intrinsic value of old and new coins (Chilosi and Volckart 2010, 3–4).

2 It is well-known that debasement is likely either the direct means of simply making higher profit from minting itself, or the indirect means to deflate accumulated debt.

3 For example, feudal rents and payments from the king's own land, land taxes (*taille*), poll taxes, custom taxes, taxes on specific goods (e.g., salt). However, many of these taxes were collected annually or even biannually and were difficult to raise in the short run without negotiating with other groups in society (Sussman 1993, 47).

4 'Periodic re-coinage' was another medieval income from minting. Periodic re-coinage means that old coins were declared invalid and exchanged for new ones at publicly announced exchange rates and dates. An exchange fee was charged to tax trade and inhabitants. This system has been analyzed in Svensson (2013; 2016).

5 See e.g., Sussman (1993) for France and Edvinsson (2011) for Sweden.

6 The mint equivalent ( $L$ ) (or mint par) is the value of coins struck from a mark of pure silver. The mint price ( $Q$ ) is the value of coins that a person receives for a mark of pure silver.

7 The mint charge rate ( $s$ ) is calculated as follows:  $s = (L - Q) / L$ .

price ( $Q$ ) at the beginning of the debasement cycle, signalling a potential higher market price of bullion.<sup>8</sup> Whereas prices for most common products were rigid, prices of precious metals should not have been. Thus, the relative price of silver increased, leading to a higher purchasing power for silver and a higher demand for nominal money. People then had incentives to bring their silver (bullion, jewellery, foreign coins) to the mint to receive silver coins — especially if the mint offered a higher mint price than it had done before (Sussman 1993, 62, Sussman and Zeira 2003, 1772). Therefore, mint production should in fact increase from the beginning of a debasement cycle. When prices on common products (e.g. grain prices) later in the debasement cycle caught up with the silver and mint prices, i.e. there was an increase in inflation, the demand for holding coins and the incentives for minting fresh coins from bullion would have decreased substantially (Sussman 1993, 62).

When debasement had continued for a while and the mint price of new issues became higher than the mint equivalent of older issues, the re-minting of older coins would have increased due to the possibilities for arbitrage. If common people used coins based on their face value and could not distinguish between high- and low-quality coins, experts could extract silver from old coins with high fineness and bring the bullion to the mint in order to have it re-minted into a larger nominal sum (of bad coins) — despite the loss of seigniorage. As a result, both re-minting and *seigniorage* would have increased (Sussman 1993, 52, Chilosi and Volckart 2010, 3). The necessary conditions for experts to re-mint good coins as bad ones are that: 1) ordinary people used coins based on their face value and could not distinguish between good and bad coins; and 2) the mint price for new issues was higher than the mint equivalent for older issues, i.e.  $Q_t > L_{t-i}$  (Sussman 1993, 52).<sup>9</sup> *This phenomenon, to make an arbitrage by re-minting older issues, would be especially profitable when the debasement rate was high, since  $Q_t$  then rapidly became higher than  $L_{t-i}$ .* It is not likely that the experts would make their knowledge about fineness freely available. If they had done, they could not have made this arbitrage (Sussman 1993, 53).

When the silver content of coins became extremely low, the debasement cycle ended with a reform of coinage. New coins with a high silver content could

then be issued. The coinage reform was costly for money holders, since it required that silver be extracted from coins with a low silver content or else bad coins became simply worthless. When this coinage reform approached or was announced, the demand for money holdings would have become extremely low and minting would cease (Sussman and Zeira 2003, 1770).

Empirical evidence from medieval France and Sweden shows that an emergency cycle of debasements consisted, stepwise, of relatively fast increases of both the mint equivalent and the mint price with a successive lowering of the fineness (Sussman 1993, 54–57; Edvinsson 2011, 170–77).<sup>10</sup> The cycle always ended with a coinage reform where a new coinage with high silver fineness was introduced.

### The Tax Burden of Debasements

Although the ruler during the Middle Ages had the right to issue coinage, people regarded secret debasements as unfair — as evidenced by several complaints (Kluge 2007, 54–55). As shown above, it was probably not the experts who sold bullion to the mints that were heavily taxed, since they could do an arbitrage. Initially there might have been few losers from the debasement. Sussman (1993, 67) argues that the increased supply of money might have stimulated the use of idle resources. As a result, the total output, the tax base, and tax incomes would have increased. However, when the excess supply of money translated into inflation, some groups were heavily taxed on inflation. The classes that traditionally suffered most from inflation were the nobility and clergy, whose income were nominally fixed but whose expenditures increased due to the inflation of imported products. Creditors and property owners with nominal rent contracts, as well as wage earners, would also bear a heavy burden from the inflation tax (Sussman 1993, 67–68).

The consequences of debasements are not only an undermined currency and higher prices with a time-lag, but also weaker confidence in the coinage in general. The latter can be very costly to repair. The coins' functions both as a medium of exchange and as a standard of value is impoverished by secret debasements. Uncertainty increases and trade is hampered at a significant cost to society. It is not clear that debasements are profitable for the coin issuer and society in the long run. Many researchers claim that during the Middle Ages it was an important goal for the minting authority to keep a stable coinage (Spufford 2000, 59, Franzén 2006, 66; Edvinsson et al. 2010, 67).

8 It should have been difficult for common people to determine whether a higher mint price in the beginning of a debasement cycle depended on a higher market price of bullion or the start of debasement.

9 Let's say that  $L_{t-i}$  is 240 pennies for a pound of bullion. If the new mint equivalent and mint price are set to  $L_t = 300$  pennies and  $Q_t = 260$  pennies, then,  $S_t = 40$  pennies and the arbitrage is 20 pennies for handing in a pound of silver for minting.

10 In a debasement cycle from 1417 to 1422 in France, the mint equivalent and mint price increased by 2300 and 775 per cent, respectively.

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