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The Veil of Vouchers

S. Ramachandran In the five years since Czechoslovakia and Mongolia pioneered vouchers, other countries have also used them in their mass privatization programs. But the effect of vouchers and how they work are often misunderstood. Using a simple extension of monetary theory, this Note shows why vouchers do not affect the price level even though, like currency, they carry a face value. And it shows that vouchers allow assets to sell despite seemingly binding minimum acceptable bid prices.

Basic voucher arithmetic

Consider the simplest case of a closed, transforming economy whose 10 million people use the pengo as currency and whose government is privatizing 150 million pengos (in book value) of state-owned assets such as enterprises and houses.

Cash-only auction

To understand the effects of vouchers, it is helpful to first consider what would happen in their absence—if the government sells the assets for cash only. The value of cash (in terms of goods such as coconuts or hamburgers)—and thus the price level—depends on the demand for real balances. Assume that in the simple case described above there were 500 million pengos in cash outstanding and people wished to hold the equivalent of 500 million coconuts (or hamburgers) to effect transactions conveniently. Then each pengo would be worth a coconut—and vice versa. The relative prices of all other goods would be determined by supply and demand.

If state-owned assets were privatized for cash alone and no vouchers were created, the mar-

ket would still clear. How much cash would be tendered in the cash auction cannot be predicted—except that it would necessarily be less than 500 million pengos, the total cash outstanding. But two results can be predicted: First, the aggregate cash bid would be unrelated to the assets' book value.¹ Second, regardless of how much cash was tendered, the price level would fall until the untendered cash was again worth 500 million coconuts.

This last result lies at the core of monetary theory. If, for example, 100 million pengos of currency were tendered and therefore withdrawn permanently from circulation, the 400 million pengos still outstanding must be enough to buy the 500 million coconut-equivalent that the public desires to hold as cash to effect transactions. The price of each coconut must therefore fall from 1 pengo to 80 pengitos ($400 \div 500$, with 100 pengitos to the pengo), and the nominal price of all other goods would fall by an equivalent amount so that relative prices remain unchanged. One cannot say how quickly the price level would fall, but the final equilibrium is unambiguous. (If the cash tendered were subsequently reinjected into the economy, the price level would not change.)

Vouchers-only auction

Now assume the government distributes 200 million vouchers—pieces of paper that can be used to bid for the assets, each with a face value of one pengo. Recipients pay nothing (or a token amount) for the vouchers. And whether each receives twenty vouchers or an amount related to his or her age, height, or military service is a detail that affects the redistribution of wealth, not the market prices of vouchers or assets.





Let's say state-owned enterprises are sold for vouchers only (that is, no cash is accepted) and the auction involves multiple rounds of bidding, but final allocation and payment are made only when there is no excess supply of or demand for any firm. (In the Czech privatization program, most firms were sold in just two rounds of bidding.) Because vouchers have no use except in buying these firms, the voucher price of each firm would be bid up or down until every voucher distributed is tendered and every firm is sold.² Some firms may sell for more than book value and some for less, but the aggregate price paid for all firms would have to equal the aggregate face value of vouchers. Thus, if only 50 million vouchers had been issued rather than 200 million, all firms would still have sold, though for an aggregate 50 million pengos in vouchers—a value unrelated to the assets' book value of 150 million pengos.

In addition, with 200 million vouchers issued, each with a face value of one pengos, the cash value in the secondary market for vouchers need not equal 200 million pengos. Some voucher recipients would be uninterested in buying firms and others would be interested in buying a sizable stake; and the cash price of a voucher could be greater or less than a pengos depending on the (unobservable) market price (in cash) of the assets being sold.

Cash and voucher auction

If the government accepts any combination of vouchers and cash as payment for assets, this puts a ceiling on the cash price of vouchers.³ And the cash price of vouchers in the secondary market would invariably be lower than the ceiling.

Consider what would happen if 200 million pengos in vouchers were outstanding and assets were sold without a reservation price for either cash or vouchers. If the market value of all the assets was 100 million pengos in a cash-only auction, a voucher would trade for 50 pengos cash ($100 \div 200$) in the secondary market. Such secondary trading allows individuals

to accumulate or divest vouchers but would not alter the aggregate outstanding stock of cash or vouchers. Because bidders would find it cheaper to tender vouchers at the auction, no cash would be tendered.

But some cash could be tendered if there were so few vouchers outstanding that they traded at par in the secondary market. If only 80 million pengos in vouchers were distributed, for example, each voucher would tend to trade for 1.25 pengos in cash ($100 \div 80$)—a substantial premium over face value. But because people could pay cash for assets, no one would pay more than a pengos for a voucher. So vouchers would never actually trade at a premium,⁴ and all 80 million vouchers would be tendered at the auction along with 20 million pengos in cash.

In this example, cash is tendered only because the government had in effect put too low a ceiling on the cash price of vouchers. Accepting each voucher at face value—on par with cash—prevented the vouchers' real value (in terms of goods) from rising enough to clear the asset market. (The cash price ceiling on vouchers is binding only if the aggregate nominal stock of vouchers is less than the assets' market value in cash—which is unobservable before the auction.)

This result has a simple policy implication: If policymakers do not want to alter the amount of cash outstanding (and perhaps the price level), it is better to issue "too many" vouchers. Harmlessly bidding up the voucher prices of firms also allows the sale to fetch a "good" price, helping to avoid the criticism of selling too cheaply. Of course, issuing more vouchers lowers the cash price of vouchers in the secondary market (that is, increases the discount from face value). But the government will not be blamed for this if the secondary market is not explicitly legal—and trades are therefore conducted only surreptitiously (though efficiently).

Adding a reservation price

In the examples so far, assets are sold for any price, no matter how low. But governments

often set a reservation price (a minimum acceptable bid price) to deflect the inevitable criticism that they are “giving away the crown jewels” or in a misguided attempt to counter perceived collusion by bidders. (It is ironic that those who object to firms’ being sold too cheaply barely protest when vouchers are distributed for free, although the two are equivalent, as shown below.)

To see how having a reservation price affects outcomes, let’s extend the earlier example—in which 200 million pengos in vouchers are issued—by having the government set a reservation price of 220 million pengos (to be binding, the reservation price must exceed the aggregate face value of vouchers outstanding). Assets will not sell unless the additional 20 million pengos are paid in, so vouchers must be augmented with cash. But the assets do not become more valuable just because a reservation price is set, and the market value remains 100 million pengos in cash (or coconut-equivalent). Since 20 million pengos must be paid in cash, the 200 million vouchers can be worth only 80 million pengos in cash—implying a secondary market price for vouchers of 40 pengitos ($80 \div 200$), down from 50 pengitos with no binding reservation price.

Two important results should be noted. First, a binding reservation price does not prevent asset sales but only reduces the secondary market price of vouchers. This counterintuitive result occurs because the secondary market discount of voucher prices acts as a safety valve. Second, for the secondary market discount to undo the normally pernicious effect of a reservation price, the market must have sufficient information about the rules of the auction and the assets being sold. When important information—such as the amount and sequence of assets to be sold—is wanting, the secondary market prices of vouchers may not fall sufficiently, thereby inhibiting asset sales. Recently, the World Bank sought—and failed—to persuade the government of a transition economy to eliminate minimum prices in its voucher privatization. But far more important would

have been to persuade the government to announce the sequence of the asset sales—an action to which it would have agreed. That would have led to sufficient widening of the secondary market discount of vouchers—and a more successful privatization.

Thus, reservation prices are not fatal to voucher privatization. They can be a useful illusion, shielding the government from the common criticism of “selling too cheaply.” Assets would sell even if the reservation price exceeds the (unobservable) market price of assets—as long as it is less than the sum of the market price in cash and the aggregate outstanding vouchers. This result favors distributing lots of vouchers.

But to say that reservation prices are not fatal to privatization is not to argue that they are desirable. Reservation prices are usually set for each firm, not in the aggregate, and firms whose market values are lowest relative to their reservation prices would remain unsold. A firm whose market value was 1 million pengos but whose reservation price was 3 million, for example, would go unsold because buying 3 million pengos in vouchers would cost 1.2 million in cash—200,000 pengos too much.⁵

Voucher myths

It is often claimed that vouchers make privatization affordable, create purchasing power, and overcome capital shortages. These are myths that arise from the paradox of composition: what appears to be true from an individual’s point of view is not true in the aggregate.

A person who receives a voucher may think that she is wealthier than before, but if everyone receives a voucher, she is not. Wealth represents her share of the economy’s income, and everyone obviously cannot get a larger share. More important—and counterintuitively—when the government “sells” assets, the public pays nothing real. The public has the equivalent of 500 million coconuts in cash before and after the sale regardless of whether vouchers or cash or both are used. Both cash and vouchers are



mere pieces of paper, costlessly created by government fiat. The only difference is that using cash may lower the price level. Voucher privatization merely transfers assets held in collective (state) ownership to segregated individual accounts, and purchasing power is irrelevant in this “redesignation.” If vouchers or cash could add to wealth or augment capital or purchasing power, the printing press would be the philosopher’s stone that alchemists have long sought.

Why vouchers?

If cash can do what vouchers can, why vouchers? Some prefer vouchers as a means to redistribute wealth, to make privatization “fair,” but in reality any redistribution would be very small. Even in the most totalitarian of communist societies, the value of physical assets the government owns is dwarfed by human capital, which is unaffected by privatization. Labor income generally accounts for about three-quarters of GNP—but for far more early in transition, when existing capital has been rendered nearly worthless—with the rest of GNP the return to capital, both land and machines. State-owned assets are only part of such capital, so the potential wealth redistribution through vouchers is small. The growing disparities in wealth in postcommunist economies reflect the highly skewed distribution of entrepreneurship (and rent-seeking abilities, given the continued price distortions and subsidies), not unfair privatization.

Although privatization practitioners may advocate using vouchers for the wrong reasons, there are defensible advantages. First, although the nominal aggregate stock of cash has no real effect in the medium to long term, fiddling with the money supply could generate temporary real effects when changes in price levels cannot be easily distinguished from changes in relative prices. Although cash tendered in privatization could be quickly reinjected into the economy by buying back government bonds or by giving a one-time increase to civil servants, economists are a nervous breed who see vouchers as less

risky than using cash. Second, used cleverly, vouchers are one way—but not the only way—of generating some harmless illusions. Using vouchers may seem a more equitable approach to the public, and it helps avoid claims that the government is selling assets “too cheaply”—thereby safeguarding the difficult transition to a market economy.

- ¹ If book values were not adequately adjusted for inflation, market values would be higher. But if the assets cannot be redeployed from producing what central planners dictate to producing what customers want, market values would be lower. In either case, however, the coconut equivalent of the untendered currency would remain unchanged.
- ² For simplicity, this example ignores the 5 to 10 percent of those eligible who are too apathetic to collect vouchers and the similar share of distributed vouchers that expire unused.
- ³ A ceiling on the currency price of vouchers is a floor on the voucher price of currency. A discount is often allowed for cash payments, but this detail would only clutter, not alter, the analysis. Even if a 100 pengo (face value) voucher were accepted as equivalent to cash for asset sales, it would not exchange for a 100 pengo currency note in secondary market trades. While the government is obliged to accept a 100 pengo voucher instead of a 100 pengo note, it is not obligated to convert one into the other on demand (as it must exchange a 100 pengo currency note for five 20 pengo notes, or vice versa). The pengo prices of different denominations of currency notes are pegged (with both a floor and a ceiling), but the currency price of a voucher has only a ceiling.
- ⁴ Vouchers may still trade at a slight discount because their option value is smaller than that of cash, which does not expire. At modest interest rates, this option value would be swamped by the transaction cost (bid-ask spread).
- ⁵ If some firms remain unsold, the vouchers freed up would be used in bidding for the other firms, depressing secondary market prices for vouchers below 40 pengitos.

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