Real World Graduation: Question 82: The Penny

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Question 82

There has been some discussion in recent years about the utility of small-denomination U. S. coins such as the penny and the nickel. Some people have concluded that we would be better off to abolish these coins. What is the most plausible reason for abolishing the penny?

a) The buying power of the penny is so low as to not be worth continuing; for example, there is no such thing as "penny candy" any more.
b) The penny is too heavy to justify carrying around, when considered with regard to its buying power.
c) The effect of monetary inflation has made penny nearly worthless. People don't even collect change if it is only a few cents; people won't stop to pick up a penny on the street.
d) It has always been an inconvenience, since it is nearly the same size as a dime.
e) Some combination of a), b), and c).

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Answer to Question 82

This is trick question. All of the answers are false.

Answers a), b) , and c) mention monetary inflation. It is true that monetary inflation has reduced the purchasing power of the penny, but that is not why the coin itself will be abolished. The real reason is that the metal has become too valuable relative to its purchasing power.

Answer d) is wrong because convenience has never been an issue.

The penny was once made of copper, but when the currency was inflated to the point that the cost of making the penny became greater than its face value, the formula was revised to use cheaper metals. Here are the dates of minting along with weights and relative compositions from 1783 [1]:

1783 - 1837: 3.1 g copper, total = 3.1 g
1837 - 1857: 2.945 g copper plus 0.155 g tin/zinc; total = 3.1 g
1857 - 1863: 2.728 g copper plus 0.372 g nickel; total = 3.1 g
1864 - 1942: 2.945 g copper plus 0.155 g tin/zinc; total = 3.1 g
1943: 3.1 g steel, coated with zinc (due to shortage of copper for the WW II war effort)
1943 - 1961: 2.945 g copper plus 0.155 g tin/zinc; total = 3.1 g
1962 - 1981: 2.945 g copper plus 0.155 g zinc; total = 3.1 g
1982 - present: 2.4375 g zinc plus 0.0625 g copper; 2.5 g total

So, because of inflation of the currency, the dollar prices of copper and zinc rose until the amount needed to mint a penny cost more than 0.01 dollar; i.e., it cost more to make a penny than its resulting face value. For example, the price of copper today (10 May 2019) is $2.77/lb, which is $6.094 per kg. If the coin were made of copper, it would cost (3.1 grams/1000 grams per kg) = $0.0188 per coin, just for the material. Zinc now sells for $1.27 per lb, which is 2.728 per kg. With the current formula, the material costs of a penny are (2.4374/1000)*$2.728 + (0.0625/1000)*$6.094 = $0.007, or seven-tenths of a penny.

In other words, the metals in the penny are too valuable (in dollar terms) to be wasted making units of currency that have the buying power of 0.01 dollar. That is why the penny will be abolished, and the nickel and dime shortly thereafter.

Here is a recent example of this trend. The Turkish lira was subdivided into 100 kurush, much as a dollar is divided into 100 pennies. Over time, the Turkish lira became so heavily inflated that the government began to make coins out of aluminum, including coins of having a face value of several lira. (Aluminum usually sells for about 60 to 65% of the price of zinc.) But the inflation of the currency progressed so quickly that the cost of minting even aluminum coins was far in excess of their face value in lira/kurush; and the aluminum coins were abolished in 1980.

[1] See www.livescience.com/mysteries/070129_penny.html

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