A Numeraire-Independent Decomposition of Uses- and Sources-Side Tax Incidence, with an Application to the Incidence of a Carbon Tax

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Extended Abstract:

An important distinction when evaluating the incidence of a tax (or other policy) is between uses-side incidence (incidence via changes in prices of consumer goods) and sources-side incidence (incidence via changes in wages, return on capital, and other sources of income). Incidence studies often decompose incidence into uses- and sources-side components. However, as noted by Fullerton and Metcalf (2002, *Handbook of Public Economics*), what fraction of the overall incidence of a tax is sources- versus uses-side depends on how prices are normalized (i.e., on the choice of the numeraire): choosing as numeraire a good whose price rises relative to other goods due to the tax will shift the overall burden of the tax toward the sources-side of the decomposition, whereas choosing a numeraire whose relative price falls will shift the burden toward the uses-side. Since the choice of numeraire is arbitrary, this means that the standard uses/sources decomposition is also arbitrary.

This paper proposes and derives an alternative uses/sources incidence decomposition, and shows that it is numeraire-independent. The key to this new decomposition is that rather than decomposing incidence into two terms (sources and uses), it decomposes incidence into three terms: incidence on the average individual (or household), the deviation from that average due to sources-side incidence, and the deviation due to uses-side incidence. Decomposing incidence in that way produces numeraire-independent results.

In addition to the obvious advantage that this decomposition doesn't depend on an arbitrarily chosen numeraire, it also clarifies what uses- and sources-side incidence really mean. The overall incidence of a tax cannot be meaningfully divided into uses- and sources-side incidence: in real terms, there is no distinction between having all incomes go down by x% or all prices go up by x%. The importance of the sources- and uses-side distinction is in looking at how incidence varies across individuals or groups: if two people get their income from different sources, they may face different sources-side incidence, and if they buy different goods, they

may face different uses-side incidence. This new decomposition makes that clear, with terms representing how incidence varies across individuals due to sources- and uses-side effects.

The paper also illustrates the use of this decomposition, by applying it to estimates of the incidence of a carbon tax across income groups (taken from Williams *et al.*, 2015, *National Tax Journal*). For comparison, it also calculates a more standard sources/uses decomposition for those same estimates, and shows how that decomposition varies widely with the choice of numeraire.