



Unsticking the flypaper effect in an uncertain world[☆]



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ABSTRACT

We provide a novel explanation for the flypaper effect based on insurance arguments. In our model, the flypaper effect arises due to the differential response of precautionary savings to private income or fiscal transfers shocks in an uncertain world with incomplete markets. The model generates two testable implications: (i) the flypaper effect is a decreasing function of the correlation between fiscal transfers and private income, and (ii) such relationship is stronger the higher is the volatility of fiscal transfers and/or private income. An empirical analysis of Argentinean provinces for the period 1963–2006 finds strong support for the model's implications.

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“The flypaper effect results when a dollar of exogenous grant-in-aid leads to significantly greater public spending than an equivalent dollar of citizen income: Money sticks where it hits. Viewing governments as agents for a representative citizen voter, this empirical result is an anomaly.”

[Robert Inman (2008)]

1. Introduction

The flypaper effect is a widely-documented empirical regularity in public finance that holds that the propensity of subnational governmental units to spend out of intergovernmental unconditional fiscal transfers (hereafter, fiscal transfers) is higher than the propensity to spend

out of private income. According to Inman (2008), 3500 research papers have documented this stylized fact for numerous countries and levels of government in the world. These studies show that while an extra dollar in private income increases public spending by \$0.02–\$0.05, an equivalent increase in fiscal transfers triggers a rise in spending that lies between \$0.25 and \$1.3. The term “flypaper effect” was coined in early papers that uncovered this stylized fact (Henderson, 1968; Gramlich, 1969). This catchy expression captures the idea that money sticks where it hits: money in the private sector (i.e., from private income) tends to be allocated to private consumption rather than being taxed away, while money in the public sector (i.e., from fiscal transfers) tends to be spent by the public sector rather than being rebated back to citizens.

As Inman's quote illustrates, the flypaper effect has been regarded as a puzzle or an anomaly. This is indeed the case if one thinks in terms of a model in which a representative citizen maximizes her utility subject to her total income – composed by the sum of private income and her share of fiscal transfers. Such a model would predict an identical propensity to spend out of private income or fiscal transfers. After all, money is fungible and the source of financing should not affect the optimal allocation of resources.

Explanations for the flypaper effect have abounded and can be divided into five different groups, two of them pointing to potential specification errors and the remaining three based on theoretical arguments. A

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first group of explanations argues that non-fungible conditional fiscal transfers, like the ones American states receive from matching grants, are misclassified as unconditional ones. A second group holds that omitted variables could also falsely support the flypaper effect if unobserved community characteristics, which affect the technology or effective cost of public spending, were systematically related with citizens' private income (Hamilton, 1983). Knight (2002) also argues that the omitted variable could reflect an unobserved preference for the targeted local public good (in his case public spending in highways). The flypaper puzzle, however, remains after using truly unconditional grants (Inman, 1971; Gramlich and Galper, 1973; Bowman, 1974) or controlling for population characteristics. A third group holds that the choice model of the representative citizen might be misspecified because the citizen confuses the income effect generated by fiscal transfers with a price effect that reduces the average effective cost of public spending (Courant et al, 1979; Oates, 1979), is not fully informed and fails to see the public budget (Filimon et al, 1982) or, even when fully informed, might not behave completely rationally (Hines and Thaler, 1995). Building upon bureaucratic capture, Lutz (2010) shows that the flypaper effect tends to vanish in a setting with a strong presumption that public good provision decisions reflect the preferences of voters (i.e., direct democracy). In a related paper, Strumpf (1998) argues that one shortcoming of the flypaper effect literature is that it presumes all communities have an identical propensity to consume from an intergovernmental grant. He shows that the flypaper effect should be more important in high overhead communities (which implies a lower provision of public services and a stronger role for revenue-maximizing forces in the budget-setting process). A fourth group uses political science arguments that exploit the role that inefficient political institutions have in revealing citizens' preferences (Chernick, 1979). A fifth group relies on real collection costs (Hamilton, 1986; Aragón, 2009) or distortionary taxation arguments (Vegh and Vuletin, 2015).

This paper provides a novel additional explanation for the flypaper effect based on insurance arguments. Consider an uncertain world with incomplete markets in which a subnational unit (hereafter, province) has two stochastic sources of income: private income and fiscal transfers. In such a world, how will government spending react to an increase in fiscal transfers relative to an increase in private income?¹ We show that the answer depends on (i) how each shock affects the variance of total income and (ii) how precautionary savings react to the change in the variance of total income.

To understand the basic intuition behind our results, consider, as a benchmark, the extreme case in which the variance of private income and fiscal transfers is the same and the correlation is one. In such a case, both sources of income are identical in terms of risk. Since either shock will increase the variance of total income by the same amount, precautionary savings will increase by the same amount and, therefore, government spending will rise by the same amount in response to either shock. In other words, the flypaper effect is zero. In fact, in this case of perfect positive correlation, our stochastic model reduces to the standard static model with no uncertainty because the stochastic structure is such that fiscal transfers do not provide any insurance.

Suppose now that the correlation between private income and fiscal transfers is zero. In this case, fiscal transfers are providing some insurance to the province because it now has two uncorrelated sources of income. Suppose also that, as is the case in practice, the share of fiscal transfers in total income is less than half (i.e., private income represents the main source of total income). An increase in private income will then raise the variance of total income by more than the same increase in fiscal transfers because an increase in private income raises the share of private income in total income but an equivalent increase in fiscal transfers reduces it. In other words, from a portfolio point of view, an

increase in private income decreases diversification, while an increase in fiscal transfers increases diversification.² As a result, precautionary savings will increase by more in the case of an increase in private income than in the case of an increase in fiscal transfers. This implies that overall spending will be higher in response to an increase in fiscal transfers than in response to an increase in private income. Since overall spending is allocated to both private and government consumption, government spending increases by more in response to an increase in fiscal transfers than in response to an increase in private income (i.e., the flypaper effect is positive). In sum, our model rationalizes a positive flypaper effect as the result of two non-perfectly correlated sources of income affecting the variance of total income differently and thus leading to different reactions in precautionary savings and hence of government spending. The only key friction is the assumption of incomplete markets.

In addition to offering a new theoretical take on the flypaper effect, our model yields two testable empirical implications. First, the flypaper effect is a decreasing function of the correlation between private income and federal transfers. Intuitively, the lower the correlation between private income and fiscal transfers, the more diversified is the province's income portfolio and thus the larger the difference in precautionary saving in response to an increase in private income relative to fiscal transfers. Second, the effect of the correlation on the flypaper effect becomes stronger the higher is the volatility of private income and/or transfers. Intuitively, the larger the variance of the province's income portfolio, the riskier the portfolio, and hence the larger the difference in precautionary saving in response to an increase in private income relative to fiscal transfers.

We test these two predictions of the model by using a dataset for Argentinean provinces. After addressing the possible endogeneity of grants, our empirical findings for Argentinean provinces support the two theoretical implications described above and show that the proposed mechanism explains about 12% of the overall flypaper effect observed.

The paper proceeds as follows. Section 2 develops our theoretical contribution. Turning to the empirical evidence, Section 3 describes basic background information on Argentina that will prove critical in understanding the nature and determinants of fiscal transfers from the federal government to provinces as well as the identification strategy proposed in Section 4 to deal with endogeneity considerations. Section 5 documents the presence of the flypaper effect in Argentinean provinces, after controlling for endogeneity concerns, various other possible determinants of fiscal spending, as well as for provincial and year fixed-effects. We then test, and find strong support for, our two key empirical implications in Section 6. Concluding remarks are presented in Section 7.

2. A simple model of insurance

The flypaper effect literature has traditionally relied on a standard one-period model to describe the flypaper effect as an anomaly (e.g., Henderson, 1968; Gramlich, 1969; Knight, 2002; Inman, 2008). In the typical model – spelled out in an online appendix – a representative citizen (RC) maximizes her utility, which depends on private consumption (c) and government spending (g), subject to her total income, which is the sum of her private income y and her share of fiscal transfers f . In this context, define the flypaper effect (FP) as

$$FP \equiv \Delta g^f - \Delta g^y, \quad (1)$$

where Δg^y and Δg^f denote the change in government spending in response to an increase of one dollar in private income or fiscal transfers,

¹ By increase in either fiscal transfers or private income, we mean an increase in their expected value.

² Remember from basic portfolio theory that if a portfolio is comprised of two uncorrelated sources of income with equal variances, the total variance is minimized if each source represents one half of the portfolio. Of course, while in portfolio theory the shares of different assets are chosen optimally, the provinces take as given these shares.

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