Should the Federal Government Reallocate Funds Within Federal Transfers?

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Abstract

It is recognized that one of the goals of federal transfers is to provide the states with some financial leverage during recessions. Federal transfers in the USA comprise such components as retirement and disability payments for individuals, other direct payments for individuals or organizations, grants, procurement contracts, and salaries and wages. Is the composition of the federal transfers budget having an optimal effect on the business cycle or should the federal government reallocate some expenditures? In this paper, we argue that the federal government may improve its role in stabilizing the business cycle if some reallocation is made from procurement contracts and payments for other than individuals to direct payments for individuals, grants, and disability and retirement payments.

Keywords: Components of Federal Transfers, Business Cycles, Panel Data, GMM.

JEL Classification: $E32$, $E61$, $O51$.

1 Introduction

It is recognized that one of the goals of federal transfers is to provide the states with some financial leverage during recessions. Federal Transfers in the USA comprise such components as retirement and disability payments for individuals, other direct payments for individuals or organizations, grants, procurement contracts, and wages. Is the composition of federal transfers budget having an optimal effect on the business cycle of the states or should the federal government reallocate some expenditures? We provide an answer to this question in this article.

National governments may use transfers to regional or state governments with the goal of improving growth convergence between poor and rich states or as a stabilization mechanism (cyclical convergence). As Bayoumi and Manson (2000) observe, "Regional flows of federal taxes and transfers within the United States and Canada are used to analyze long-term fiscal flows (the redistributive element) and short-term responses to regional business cycles (the stabilization element)". In this work we focus on the second role for federal transfers.

Most earlier work has focused on the relationship between federal transfers and migration or federal transfers and growth convergence (e.g. Kaufman, Swagel, and Dunaway 1997 for Canada, Cashin and Sahay 1995, for India, and Obstfeld and Peri 1998, for a comparison between countries). For the United States, some concern has already arisen about the effect of transfers on both long-run growth and cyclical convergence, but the focus is mostly on its connection with long-run growth (e.g. Chernick and Sturm 2005 and Holtz-Eakin and Schwartz 1995). However, some earlier studies had already showed concerns about the short-run stabilization properties of transfers. Sala-i-Martin and Sachs (1992) found that federal tax reductions contribute much more to protect the state against regional economic shocks than an increase in federal transfers. Asdrubali, Sorensen, and Yosha (1996) study the channels of risk sharing between the states of the US, and found that the federal government contributes thirteen percent to the smoothing of shocks affecting the gross state product.

Research on the role of the components of federal transfers to the states in each state business cycle is still very scarce. We are concerned with the impact of each component of federal transfers on a given state business cycle, given that the total amount transferred to that state remains constant. Thus, we suggest forms of reallocating (or not) federal transfers in order to improve the business cycle, which has important policy implications.

Our study sheds some light on the efficiency of the composition of the federal transfers budget as a mechanism of avoiding or alleviating recessions within states. This paper is divided in four sections. In Section two we present the data, methods, and specification used in the estimations. Section three presents our results. Finally, in Section four, we present our conclusions.

2 Data and Methods

2.1 Data

We have collected annual data for the fifty USA states between 1983 and 2007 (1250 observations), excluding the District of Columbia, as it may be considered an outlier, because it is richer than the other states. We use several sources to obtain the data needed for this study. Federal transfers and each of the sub-components were obtained from the Consolidated Federal Funds Report (CFFR) on-line and CD edition.[1] Gross state product and gross domestic product are from the Regional Economic Accounts of the Bureau of Economic Analysis (BEA). Total US population and state population were taken from the Census Bureau. The investment to capital ratio, an important variable to analyze transitional dynamics, is taken from Garofalo and Yamarik (2000). As already recognized, federal transfers may have redistributive (long-run) and stabilization (short-run) effects. As we are interested in the short-run effects of transfers, all explanatory variables of the cycle were detrended using the Hodrick-Prescott (HP) filter with a smoothing parameter of 100, as is usual in annual data.

Data were subject to treatment in order to obtain the following main variables:

1. *Per capita* state cyclical output (yc) - this variable is the cyclical component of the state *per capita* output. Gross state product at 2000 prices, from the Bureau of Economic Analysis (BEA), is used for output (in logs). Cyclical output for each state is obtained by subtracting from the real output series the output trend obtained with the HP filter.

2. *Per capita* USA cyclical output (yc_usa) - this variable is the cyclical component of the USA *per capita* output. Gross domestic product at 2000 prices is used for output (in logs). Cyclical output for the USA is obtained by subtracting from the real output series the output trend obtained with the HP filter.

3. Transfers (fed) - this is the total annual federal government transfers to each state (in logs). The cyclical series for transfers is obtained by subtracting from the transfers series the transfers trend obtained with the HP filter.

4. Component (dr, do, dx, gg, pc, sw) - this is the share of each component in the total amount transferred to each state. Each component designation is described in Table 1 below.[2] The cyclical series for each transfer component is obtained by subtracting from each component series the component trend obtained with the HP filter.

5. Investment-capital ratio (i/k) - The stock of physical capital and investment were taken from Garofalo and Yamarik (2000) for the period between 1983-2000, and we have completed the series for 2001 to 2007, assuming that for these seven years the growth rate of the previous five years is maintained.

In Table 1 we present descriptive statistics for the variables described above, namely, averages, standard deviation (S.D.), minimum (Min.), and maximum (Max.) values. These figures are based on time-series cross-section data. We note that these are detrended data, so averages are near zero.

[INSERT TABLE 1 AROUND HERE]

In Table 2, we address another question of potential interest: whether components' shares are pro- or counter-cyclical.

[INSERT TABLE 2 AROUND HERE]

From Table 2, we can conclude that the total amount of federal transfers as well as other direct payments for individuals are coincident and countercyclical variables, presenting the highest correlation at period t. Grants is a countercyclical lagging variable, reaching its highest correlation at lag two, and salaries and wages is a countercyclical but leading variable (with three leads). Disability and retirement payments and direct payments to other are procyclical and lagging variables, with respectively, one and two lags. Procurement contracts are procyclical and leading, with three leads. Investment to capital ratio is a lagging and countercyclical variable, with three lags.

2.2 Specification

As noted earlier, we intend to evaluate the effect of the composition of federal transfers in the cyclical output of USA states. A particularly important variable to take into account is investment in physical capital, as this is the traditional source of short-run convergence.[3] Since we are not concerned with long-run growth, the usual determinants of economies' long-run performance, such as human capital or technology, are not included in the regressions. As the state cyclical output may be influenced by nationwide cyclical output, we introduce this variable in the regression. However, the method used, which we describe in detail below, is robust to further omitted variables that we are not introducing in the regression.

We use the following specification, in which we applied different lag structures explained below:

$$yc_{i,t} = \alpha + \beta_1 yc_{i,t-1} + \beta_2 i/k_{i,t-1} + \beta_3 yc\_usa_{i,t} + \beta_4 fed_{i,t-j} + \beta_5 comp_{i,t-j} + \upsilon_i + \varepsilon_{i,t} \quad (1)$$

where $t = 1983, ..., 2007$; $i = 1, 2, ..., 50$, $j = 1, ..., 5$ is the number of lags considered, *comp* is one of the six components of federal transfers, i/k is the investment-capital ratio that we use as a control, υ_i is the fixed-effect by state, and $\varepsilon_{i,t}$ is the error term. As one of the main issues in this empirical study is causality, we implemented regressions with different lag structures. As is evident from the specification above,

we consider each component share of federal transfers (retirement/disability payments for individuals (dr), other direct payments for individuals (do), direct payments to other than for individuals (dx), grants (gg), procurement contracts (pc), and salaries and wages (sw)), together with the total amount of transfers, so that the interpretation of β_5 is the effect of *comp* on the business cycle, given that the total amount of federal transfers is fixed. Thus, an increase in *comp* must be compensated by a decrease in some other component.

2.3 Econometric Approach

One of the most serious problems when studying the relationship between federal transfers and cyclical output is the endogeneity of the right-hand-side variables, caused by possible reverse causality, omitted variables, and measurement errors. The two first problems especially can seriously affect these relationships. The amount of transfers given to a state can be determined by the state's level of income or its relative position in the business cycle, but it can also further determine the evolution of the cycle. Also, the quantity of procurement contracts for example may be dependent on the stage of the cycle, as well as the value of direct transfers for individuals or companies. We deal with the problem of causality in two ways: we consider lags in the econometric specification, as explained above and we consider an econometric approach robust to causality.

In order to deal with the various types of endogeneity of right-hand-side variables described above, in an application where the dependent variable is not so persistent, the appropriate method is the Generalized Method of Moments (GMM) developed by Arellano and Bond (1991). Under the assumptions that: (a) the error term is not serially correlated and (b) the explanatory variables are weakly exogenous (i.e., the explanatory variables are assumed to be uncorrelated with future realizations of the error term), the GMM dynamic panel uses the following moment conditions: $E[yc_{i,t-s}\Delta\varepsilon_{i,t}] = 0$ and $E[X_{i,t-s}\Delta\varepsilon_{i,t}] = 0$, for $s \geq 2; t = 3, ..., T;\ i = 1, ..., N$, where X is the complete matrix of covariates included in (1). These moment conditions indicate that the level of past values for cyclical output and federal transfers should not be correlated with contemporaneous differences in non-observed determinants of the cycle. Take as an example the possibility that the potential omitted variable "political influence of the state politicians in Washington

D.C." increases from 2003 to 2004. Is it natural to think that this change influences the transfers received in the state in 2001? The answer to this question is "no". We consider the highest number of instruments given that is below or close to fifty (the number of states) to allow the highest efficiency but small overfitting bias. On this, we follow the suggestion of Bowsher (2002). As in other earlier works, we collapsed the instrument matrix.

Consistency of the GMM estimator depends on the validity of the instruments. To address this issue we consider two specification tests: the first is the Hansen test of over-identifying restrictions, which tests the overall validity of the instruments (the null is that the instruments are valid); the second is the second-order autocorrelation test for the error term, which tests the null according to which there is no second-order autocorrelation. In general, all the specification tests indicate that the instruments used are valid.

3 What Kind of Transfers Are Best for the Business Cycle?

In this section we present the results of the regressions. The bars in the graphs represent coefficients on different components of federal transfers. When a number is above or below the bar it indicates that the coefficient is statistically significant at 1 percent (bold), 5 percent (bold italic), and 10 percent (bold grey). On the x-axis, we show results for each component for regressions in which each component can have between one to five lags. Figure 1 presents results from regressions taking all the period 1983-2007 into the analysis. Figure 2 presents results that include only periods of expansion (when USA cyclical output is above zero: 1984-1990; 1997-2001; 2006), and Figure 3 presents results that include only periods of recession (when USA cyclical output is below zero: 1991-1996; 2002-2005; 2007). Overall, we ran ninety regressions (six components times five different lag structures, for the whole period, for periods in expansion and for periods in recession). In those regressions we always reject order-one autocorrelation test in differences, as expected. The null of the order-two autocorrelation test in differences is rejected in a minority of regressions, only in the regressions that consider only periods of expansion and with transfers lagged three periods (five regressions out of ninety

shown in Figure 2, lag three). Moreover, the Hansen tests never reject, indicating that the moment conditions are verified. The Hansen test p-values remain at smaller and medium values, never indicating a problem with overfitting bias.

[INSERT FIGURE 1 AROUND HERE]

[INSERT FIGURE 2 AROUND HERE]

[INSERT FIGURE 3 AROUND HERE]

From Figure 1 we obtain that in the whole period, transfers' components that enhance cyclical output are disability and retirement payments (dr), direct payments for individuals (do), and grants (gg). Transfers' components that clearly decrease the cyclical output are direct payments for others than individuals (dx) and procurement contracts (pc). The component salaries and wages have a mixed result negatively affecting cyclical output one and two years later but increasing cyclical output five years later. As a policy conclusion, we can say that reallocations may be made from procurement contracts (pc) and direct payments for others than individuals (dx) to direct payments for individuals (do), grants (gg), and disability and retirement payments (dr). Salaries and Wages (sw) present mixed results with immediate (one and two lags) negative results and positive results five years after.

When analyzing Figure 2, which shows results from regressions that consider only periods of expansion, we conclude that general results from the whole sample (Figure 1) also hold, i.e., disability and retirement expenditures, direct payments to individuals, and grants with positive effects, and procurement contracts with negative effects. The main difference is that direct payments for other than individuals now presents mixed results, with a positive effect in lag four. An interesting result is that during expansions, salaries and wages (sw) have not a single significant result.

When analyzing Figure 3, which shows results from regressions that consider only periods of recession, we note that results differ significantly from those presented so far. Disability and Retirement and individuals' payments (dr and do) (lag four) and Salaries and Wages (lag five) have a positive effect. Procurement

contracts, grants, and direct payments for other than individuals present mixed results, with an emphasis for negative coefficients for procurement contracts and direct payments for other than individuals.

Overall, we note that payments for individuals (dr, do, sw) have a greater effect in the cycle (and namely in recessions) than payments aimed at organizations (dx and pc).[4]

We also performed some robustness analysis indicating that our results are stable. First, we exclude the investment-capital ratio and concluded that its exclusion does not change our results. In fact, all signs and statistically significant coefficients remain unchanged when that variable is dropped. We also tested regressions in which we restricted the number of instruments. We concluded that for any number of instruments that make the non-rejection of the Hansen test, all signs and statistical significant coefficients remain unchanged.

In Appendix 1 we present Tables A1 to A5 with regressions for the whole period, in which we present regressions for $j = 1$ to $j = 5$.[5] In the tables, we can also note that the investment/capital ratio is always highly significant, stressing the importance of investment in physical capital in the short-run adjustment of the states. The total amount of federal transfers to the states also shows a significant influence in the business cycle. The log of the total amount of federal transfers to each state is introduced to hold this variable constant as we analyze the effects of each component, since we are studying allocations. We should also note that the lagged cyclical output (yc_{t-1}), as well as the nationwide cyclical output (yc_usa_t), always present highly significant and positive coefficients.

4 Conclusions

We analyze the effect of each of the federal transfers components on the business cycle for the states of the USA. We ask if there is some better allocation, in terms of the distribution of money across the components of federal transfers, given the amount of dollars transferred by the USA federal government to each state, in order to positively affect the business cycles of that state.

We draw some policy implications, saying that reallocations can be made from procurement contracts (pc) and direct payments for others than individuals (dx) to direct payments for individuals (do), grants (gg), and disability and retirement payments (dr). Salaries and Wages (sw) present mixed results with immediate (one and two lags) negative results and a positive result five years later. One interesting remark regarding our results is that the components that we find as most relevant in alleviating recessions are also key areas that are stressed out in Barack Obama's "American Recovery and Reinvestment Plan", namely unemployment and health benefits (included in do), grants for education, small business, energy and the environment (included in gg), among others.

Appendice - 1 Regression Results (Non-Restricted Regressions)

[INSERT TABLE A1 AROUND HERE]

[INSERT TABLE A2 AROUND HERE]

[INSERT TABLE A3 AROUND HERE]

[INSERT TABLE A4 AROUND HERE]

[INSERT TABLE A5 AROUND HERE]

Appendice - 2 Detailed Definitions of Federal Transfers Components

Disability and Retirement Payments (dr) - Direct Payments for individuals for retirement and disability, including social security payments of all types.

Other Direct Payments for Individuals (do) - Direct Payments to individuals, other than for retirement and disability. Examples include unemployment compensation benefit payments, Federal payments for excess earned income tax credits, vocational rehabilitation for disabled veterans, public safety officers' death benefits, medicare hospital insurance, medicare supplementary medical insurance, food stamps, and unemployment compensation benefit payments (Federal to State).

Direct Payments to other than for Individuals (dx) - Examples include Government payments to the U.S. Postal Service, Federal employee life, and health insurance premium payments–employee share, legal service corporation payments, farm payments, Department of Transportation operating-differential subsidies, all volunteer-force educational assistance, veteran's education assistance, rural rental assistance payments, and interest reduction payments for rental and co-operative housing for low-income families.

Grants (gg) - General Grants. Include block grants, formula grants, project grants, and cooperative agreements. Examples include grants to public broadcasting, to Native-American tribes, to the Fulbright

Educational Exchange Program, to gangs resistance education and training, among others.

Procurement Contracts (pc) - Procurement contracts of the Defense Department, U.S. Postal Service, and all other civilian contracts.

Salaries and Wages (sw) - These include salaries and wages paid to Federal Government employees.

Endnotes

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[1]Data are available online at http://harvester.census.gov/cffr/index.html and were also supplied directly by the Census Bureau.

[2]A more detailed definition of each component can be found in Appendice 2.

[3]In the Solow Model for example, the unique source for transitional dynamics is the investment to capital ratio. In the real business cycle theory it is the center of the explanation for business cycle dynamics following a technological shock.

[4]For the conclusion that some types of transfers target individuals and others target organizations, see Appendice 2, for detailed descriptions.

[5]Other tables for restricted regressions, for expansion and depression periods, are available upon request. We do not present the entire tables within the text in order to focus our analysis on the results for the variables of interest.

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Author Biographies

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Tables

Table 1 - Overview of the Data

	Average	S.D.	Min	Max
Variables				
State Cyclical Output per capita (yc)	0.00	0.028	-0.159	0.157
USA Cyclical Output per capita (yc_usa)	0.00	0.020	-0.042	0.037
Federal Transfers (fed)	0.00	0.044	-0.144	0.436
Disability and Retirement Payments (dr in % fed)	0.00	0.012	-0.096	0.048
Other Direct Payments for Individuals (do in % fed)	0.00	0.013	-0.067	0.099
Direct Payments to other than for Individuals (dx in % fed)	0.00	0.014	-0.091	0.134
Grants (gg in % fed)	0.00	0.012	-0.047	0.099
Procurement Contracts (pc in % fed)	0.00	0.019	-0.102	0.153
Salaries and Wages (sw in % fed)	0.00	0.007	-0.040	0.046
Investment to Capital ratio (in %)	0.00	0.014	-0.090	0.116

Data Sources: CFFR, Bureau of Economic Analysis (BEA), and Census Bureau.

a. Authors' own calculations.

Table 2 - Correlations with Cyclical Output

Variables	yc_{t-3}	yc_{t-2}	yc_{t-1}	yc_t	yc_{t+1}	yc_{t+2}	yc_{t+3}
Federal Transfers (fed)	-0.02^{ns}	-0.16	-0.30	-0.30	-0.21	-0.07	0.15
Disability and Retirement Payments (dr)	-0.06^{ns}	0.05^{ns}	0.19	0.18	0.16	0.08	-0.04^{ns}
Other Direct Payments for Individuals (do)	0.04^{ns}	-0.11	-0.19	-0.30	-0.23	-0.07	0.01^{ns}
Direct Payments to other (dx)	0.11	0.12	0.02^{ns}	-0.02^{ns}	-0.06	-0.08	-0.06
Grants (gg)	-0.08	-0.17	-0.14	-0.01^{ns}	0.08	0.09	0.13
Procurement Contracts (pc)	-0.06^{ns}	0.02^{ns}	0.02^{ns}	0.06	0.05^{ns}	0.05^{ns}	0.07
Salaries and Wages (sw)	0.11	0.11	0.14	0.12	0.01^{ns}	-0.13	-0.22
Investment to Capital ratio (in %)	-0.29	-0.17	0.05^{ns}	0.19	0.27	0.17	0.03^{ns}

a. ns means that the coefficient is non-significant at 5% level.

b. Data Sources: Authors' own calculations.

Table A1 - Effects of Transfers and their Components Shares on the Cycle (Lag 1)

Comp =	dr	do	dx	gg	pc	sw
$Dep.Var.: yc_t$	(1)	(2)	(3)	(4)	(5)	(6)
yc_{t-1}	0.425***	0.452***	0.419***	0.418***	0.437***	0.445***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
yc_usa_t	0.357***	0.428***	0.441***	0.368***	0.281***	0.261***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.003)	(0.007)
i/k_{t-1}	0.553***	0.521***	0.535***	0.539***	0.449***	0.530***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
fed_{t-1}	0.195***	0.060*	0.096***	0.038	0.020	-0.002
	(0.002)	(0.091)	(0.005)	(0.318)	(0.645)	(0.956)
$comp_{t-1}$	0.783**	0.259***	-0.365***	0.196**	0.091	-0.588**
	(0.000)	(0.002)	(0.000)	(0.033)	(0.345)	(0.021)
Hansen (p-value)	0.390	0.312	0.324	0.352	0.311	0.330
$AR(1)$ (p-value)	0.026	0.029	0.027	0.030	0.037	0.023
$AR(2)$ (p-value)	0.381	0.367	0.324	0.399	0.335	0.371
Number of Obs	1150	1150	1150	1150	1150	1150

a. p-values of t-tests based on Robust Variance-Covariance Matrix estimated by GMM reported in parentheses. b. * 10% significance; ** 5% significance; *** 1% significance.

Table A2 - Effects of Transfers and their Components Shares on the Cycle (Lag 2)

Comp =	dr	do	dx	gg	pc	sw
$Dep.Var.: yc_t$	(1)	(2)	(3)	(4)	(5)	(6)
yc_{t-1}	0.532***	0.537***	0.489***	0.513***	0.547***	0.541***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
yc_usa_t	0.422***	0.452***	0.437***	0.418***	0.457***	0.351***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
i/k_{t-1}	0.555***	0.554***	0.610***	0.602***	0.485***	0.594***
	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
fed_{t-2}	0.283***	0.174***	0.173***	0.168***	0.210**	0.163***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
$comp_{t-2}$	0.438*	0.208***	-0.223***	0.234	-0.208**	-0.561***
	(0.081)	(0.003)	(0.001)	(0.159)	(0.011)	(0.002)
Hansen (p-value)	0.291	0.314	0.361	0.326	0.297	0.368
$AR(1)$ (p-value)	0.015	0.018	0.013	0.018	0.024	0.011
$AR(2)$ (p-value)	0.250	0.382	0.401	0.436	0.358	0.435
Number of Obs	1100	1100	1100	1100	1100	1100

a. p-values of t-tests based on Robust Variance-Covariance Matrix estimated by GMM reported in parentheses. b. * 10% significance; ** 5% significance; *** 1% significance.

Table A3 - Effects of Transfers and their Components Shares on the Cycle (Lag 3)

Comp =	dr	do	dx	gg	pc	sw
$Dep.Var.: yc_t$	(1)	(2)	(3)	(4)	(5)	(6)
yc_{t-1}	0.401***	0.387***	0.392***	0.379***	0.395***	0.395***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
yc_usa_t	0.364***	0.401***	0.394***	0.373***	0.416***	0.354***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
i/k_{t-1}	0.521***	0.503**	0.529**	0.618***	0.486***	0.540***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.002)
fed_{t-3}	0.248***	0.154***	0.164***	0.133***	0.162***	0.153***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
$comp_{t-3}$	0.392**	-0.018	0.026	0.287*	-0.154	-0.245
	(0.027)	(0.828)	(0.620)	(0.055)	(0.126)	(0.281)
Hansen (p-value)	0.349	0.327	0.286	0.312	0.326	0.281
$AR(1)$ (p-value)	0.000	0.000	0.000	0.000	0.000	0.000
$AR(2)$ (p-value)	0.214	0.158	0.180	0.160	0.201	0.165
Number of Obs	1050	1050	1050	1050	1050	1050

a. p-values of t-tests based on Robust Variance-Covariance Matrix estimated by GMM reported in parentheses. b. * 10% significance; ** 5% significance; *** 1% significance.

Table A4 - Effects of Transfers and their Components Shares on the Cycle (Lag 4)

Comp =	dr	do	dx	gg	pc	sw
$Dep.Var.: yc_t$	(1)	(2)	(3)	(4)	(5)	(6)
yc_{t-1}	0.415***	0.399***	0.396***	0.412***	0.424***	0.414***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
yc_usa_t	0.219***	0.321***	0.316***	0.270***	0.323***	0.349***
	(0.006)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)
i/k_{t-1}	0.589***	0.594***	0.590***	0.626***	0.580***	0.633***
	(0.000)	(0.000)	(0.035)	(0.000)	(0.000)	(0.000)
fed_{t-4}	0.331***	0.125***	0.151***	0.124***	0.151***	0.158***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
$comp_{t-4}$	0.830***	0.170***	-0.022	0.255**	-0.496***	0.368
	(0.001)	(0.007)	(0.632)	(0.044)	(0.000)	(0.127)
Hansen (p-value)	0.348	0.313	0.310	0.336	0.344	0.346
$AR(1)$ (p-value)	0.000	0.000	0.000	0.000	0.000	0.000
$AR(2)$ (p-value)	0.168	0.279	0.220	0.217	0.102	0.125
Number of Obs	1000	1000	1000	1000	1000	1000

a. p-values of t-tests based on Robust Variance-Covariance Matrix estimated by GMM reported in parentheses. b. * 10% significance; ** 5% significance; *** 1% significance.

Table A5 - Effects of Transfers and their Components Shares on the Cycle (Lag 5)

Comp =	dr	do	dx	gg	pc	sw
$Dep.Var.: yc_t$	(1)	(2)	(3)	(4)	(5)	(6)
yc_{t-1}	0.440***	0.439***	0.442***	0.456***	0.469***	0.494***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
yc_usa_t	0.295***	0.228***	0.323***	0.354***	0.192***	0.337***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.004)	(0.000)
i/k_{t-1}	0.556***	0.572***	0.539***	0.564***	0.582***	0.610***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
fed_{t-5}	0.122***	0.668***	0.068***	0.077***	0.113***	0.092***
	(0.006)	(0.002)	(0.008)	(0.002)	(0.000)	(0.000)
$comp_{t-5}$	0.146	0.185***	-0.011	-0.173	-0.521***	0.734***
	(0.413)	(0.003)	(0.851)	(0.417)	(0.040)	(0.000)
Hansen (p-value)	0.301	0.303	0.292	0.309	0.315	0.309
$AR(1)$ (p-value)	0.000	0.000	0.000	0.000	0.000	0.000
$AR(2)$ (p-value)	0.145	0.153	0.140	0.170	0.203	0.265
Number of Obs	950	950	950	950	950	950

a. p-values of t-tests based on Robust Variance-Covariance Matrix estimated by GMM reported in parentheses. b. * 10% significance; ** 5% significance; *** 1% significance.

Figures

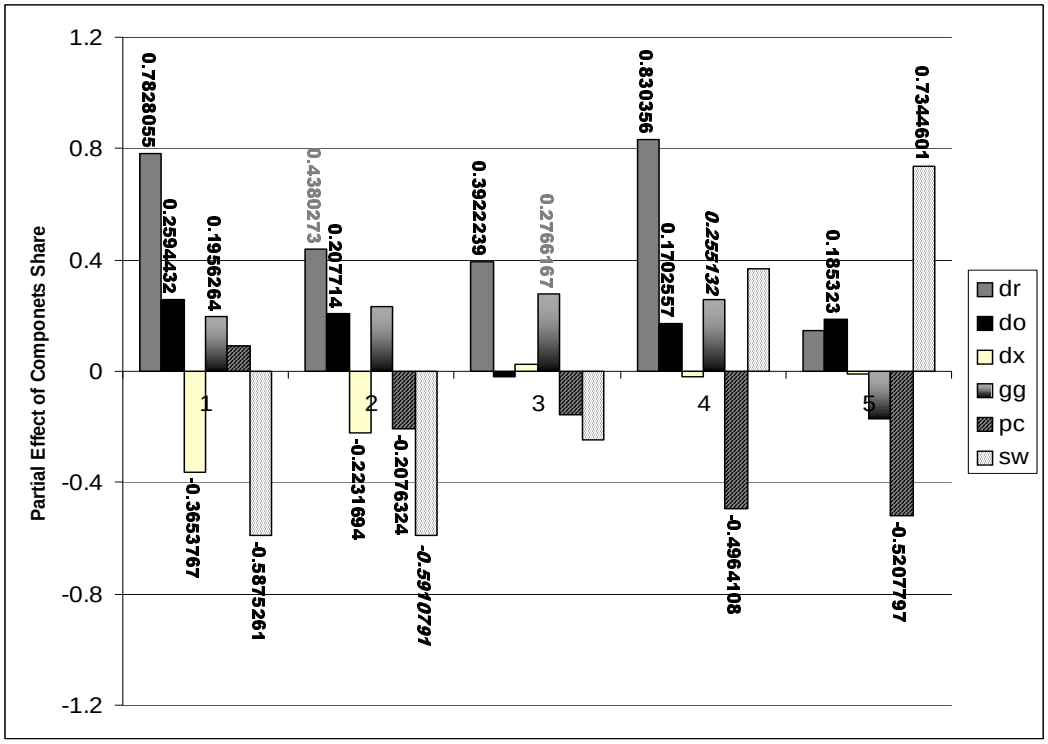

Figure 1: Coefficients on lagged values for components of transfers - whole sample

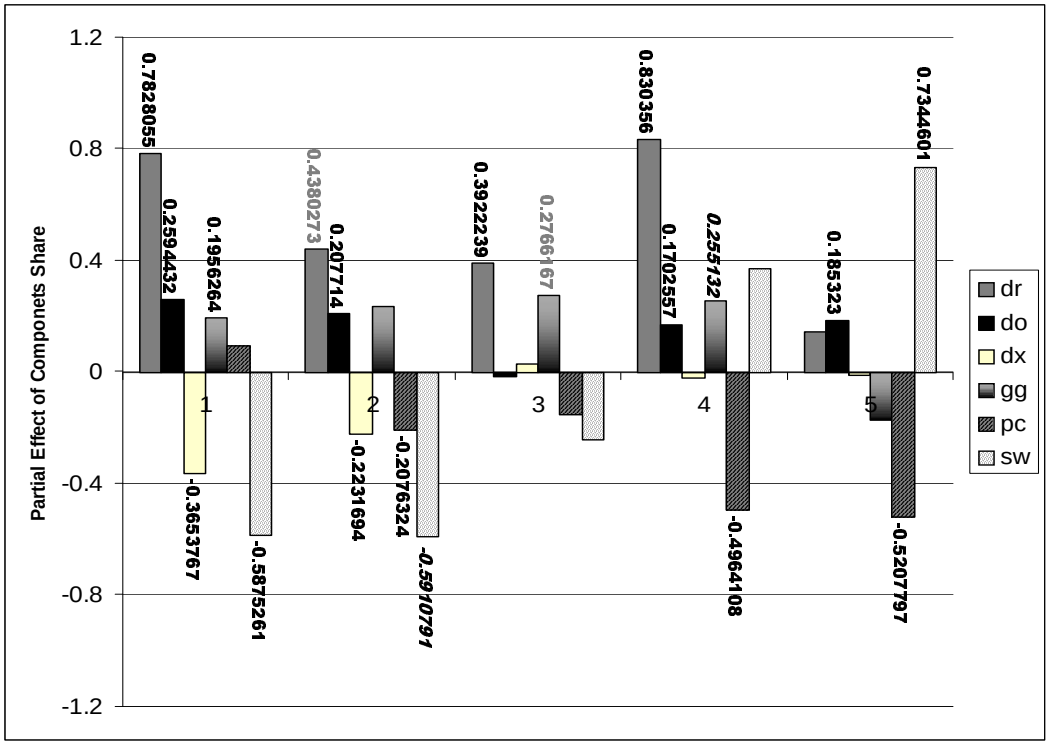

Figure 2: Coefficients on lagged values for components of transfers - expansions

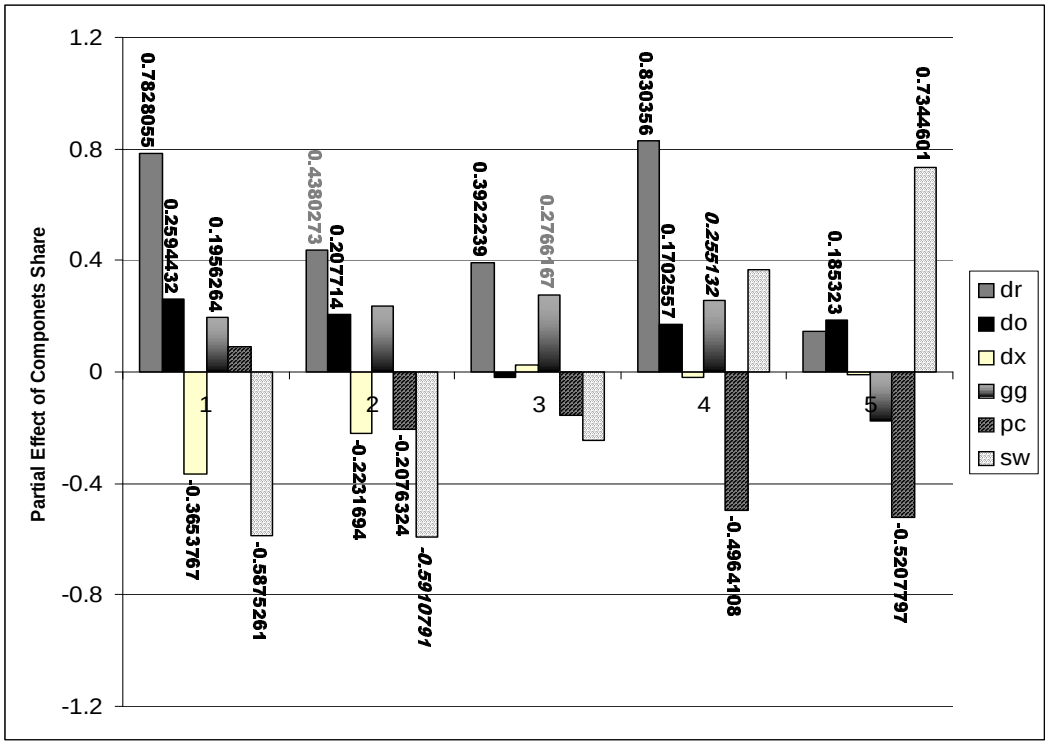

Figure 3: Coefficients on lagged values for components of transfers - recessions