Economics Bulletin

Volume 29, Issue 3

A new look at the trickle-down effect in the united states economy

Yuexing Lan
Auburn University Montgomery

Charles Hegji
Auburn University Montgomery

Abstract

This paper is a further investigation of the trickle-down theory. In addition to using more recent data, we use a methodology that examines some questions not previously addressed in the literature. The results suggest that an increase in wage leads to a more equal income distribution. The findings also indicate that there is no ¡°trickle-down¡± from proprietors¡¯ income and corporate profits to lower income group.

Citation: Yuexing Lan and Charles Hegji, (2009) "A new look at the trickle-down effect in the united states economy", *Economics Bulletin*, Vol. 29 no.3 pp. 1743-1748.
Submitted: Nov 10 2008. **Published:** July 23, 2009.

1. Introduction

A topic of interest arising each presidential election is that of income redistribution. Liberal politicians and economists argue for increased taxes on the wealthy to achieve a more equitable distribution of income. Conservative politicians and economists argue that since many of the wealthy are small business owners, taxing the wealthy stifles job creation. Which side is correct hinges on the validity of what has been coined as the "trickle-down theory" of economics.

Wikipedia defines the "trickle-down theory" as the notion that tax cuts to the rich trickle down to the poor through investment, capital accumulation, and eventually job growth. Although there is no accepted formal trickle-down theory, the idea is not new, particularly to the popular press. John F. Kennedy, for example, argued in the early 1960s for supply side tax cuts by using the term "A rising tide floats all boats."

Research on trickle-down economics is sparse[1]. Aghion and Bolton (1997) develop a theoretical growth model capable of generating trickle-down effects. In their model, capital accumulation initially widens income inequality, but over time income inequality is reduced. Matsuyama (2000) generates similar results in a model including a credit market. Matsuyama demonstrates that under certain parameter values capital accumulation separates the distribution of income between rich and poor. Under other parameter values, wealth trickles down to the poor.

There are also few empirical estimates of the trickle-down effect. In an early paper, Tuckman and Broach (1974) find that the increased trend toward income equality observed over 1947-1969 resulted from a decrease in personal income's share of proprietor's income and its increased share of social insurance income. Michel (1991) finds no evidence of a trickle–down effect from 1983 to 1987. Using average income measures and Gini coefficients, he finds that post-tax growth over that period was concentrated in the 20% of the households with the highest income. Ruggles and Stone (1992) find mixed evidence of a trickle-down effect. They find that increases in business productivity led to the greatest gains in the lowest quintile of family income from 1948 to 1979, while leading to the greatest gains in the highest quintile of family income over 1979-1990. This supports the trickle-down theory during the earlier period, but not the later.

The present paper is a further investigation of the trickle-down theory. In addition to using more recent data, we use a methodology that examines some questions not previously addressed in the literature. The second section of the paper discusses our methodology and data. Section three of the paper presents our results. Conclusions are presented in the last section of the paper.

2. Methodology and Data

[1] Arndt (1983) provides an in-depth discussion of various interpretations of the trickle-down theory as applied to developing nations.

Our methodology uses ordinary least squares regressions based on Gini coefficient data provided by the Bureau of Labor Statistics and data on the components of National Income from the Department of Commerce's National Income and Product Accounts. Specifically,

$$Gini = a + \beta_1 Wages + \beta_2 \Pr op + \beta_3 Corp + \varepsilon \quad (1)$$

where Gini is the current year's Gini coefficient, *wages* is employee compensation as reported in the National Income and Product Accounts, *prop* is proprietor's income, and *corp* is corporate profits. We consider annual data from 1967 to 2001 for all variables.

The Gini coefficient is a standard measure of income equality. The coefficient ranges from 0 to 100. A coefficient of zero denotes complete income equality, while a coefficient of unity represents complete inequality. A positive sign on the coefficient of an independent variable will signify whether that an increase in the variable results in greater income inequality, while a negative sign means that an increase in that variable leads to greater income equality.

Wages is chosen as an independent variable since wages are the largest component of personal income. Proprietor's income and corporate profits are included to examine whether trickle-down effects are generated primarily through small businesses or through large businesses. This question has not been examined previously. Since trickle-down effects may take time to occur, the above equation will be estimated both with the current year's Gini coefficient expressed as a function of current values of the independent variables and as a function of lagged values of the independent variables.

3. Empirical Results

Before estimating the model, we conduct routine diagnostic checks. We test stationarity of our variables by using Phillips-Perron method. Table 1 reports the Phillips-Perron test statistics for both level and growth rate of all variables. Second column of Table 1 shows that we can not reject the null of a unit root for level of all variables and last column indicates that growth rate of all variables are stationary. So we perform all regressions on growth rate of all variables.

Table 1
Statistics of Phillips-Perron Unit-Root Test

Variable	Level	Growth rate
Gini	-1.99	-5.01**
Wage	0.14	-3.64*
Prop	2.98	-9.72**

Corp	-2.13	-5.02**

Note: The critical values for the Phillips-Perron statistics are: -3.21 (10%), -3.55 (5%) and -4.26 (1%).
* reject the null hypothesis of unit-root process at the 5% level.
** reject the null hypothesis of series stationary at the 1% level.

Table 2 reports coefficient estimates of β from equation (1). We find the following results. First, the coefficient on wage is negative and significantly different from zero at the one percent level. This finding is consistent with those fromTuckman and Brosch (1974). Tuckman and Brosch (1974) argued that those with low incomes have benefited more from increases in wage. Therefore, an increase in wage leads to a more equal

Table 2
Estimates of β from current independent variables

Variable	Coefficient	Std. Error	Prob.
Wage	-0.172	0.082	0.04
Proprietors' income	0.025	0.045	0.57
Corporate profits	0.002	0.024	0.95

Note: The dependent variable is the growth rate of Gini coefficient and all independent variables are also in the form of growth rate.

income distribution. Second, the coefficients on proprietors' income and corporate profits are positive but insignificant. The reason is that corporate profits and proprietors' income are too small compared to wage[2], and so the effect of proprietors' income and corporate profits on income equality is weak.

Regressions were also run with the current year's growth rate of Gini coefficient expressed as a function of growth rate of corporate profits and proprietor's income lagged one through three periods. All coefficients were insignificant in these equations. As an alternative specification, the following equations were estimated

[2] See appendix table 1 for descriptive statistics.

$$Gini = \alpha + \beta X_{t-i} + \varepsilon, \quad (2)$$

$$where\ X_{t-i} = \sum_{i=1}^{n} i^2 \pi_{t-i}$$

Equation (2) specifies the current Gini in terms of a second degree polynomial in lagged profits. Separate equations were run on lagged corporate profits and lagged proprietor's income. Again, all variables are in the form of growth rate.

The above specification was chosen in part to solve the problem of multicollinearity between the independent variables when the profits of various lags were included as separate regressors. Using a weighted sum of lags as the independent variable is consistent with the idea of any trickle-down effect being cumulative. Also consistent with a cumulative trickle-down effect is the fact that the specification weighs profits at longer lags more heavily. The above equation was run with lags at one thru three, four, and five, periods. The results appear in Table 3.

Table 3
Estimates of β from lagged independent variables

Variable	Coefficient	Std. Error	Prob.
Prop_w3	0.0046	0.0031	0.15
Corp_w3	-0.0027	0.0018	0.14
Prop_w4	0.0002	0.0018	0.92
Corp_w4	-0.007	0.0011	0.54
Prop_w5	0.0012	0.0011	0.29
Corp_w5	0.0006	0.0007	0.37

Note: (i) Intercepts suppressed to ease presentation. (ii) The dependent variable is the growth rate of Gini coefficient and all independent variables are also in the form of growth rate.

Table 3 shows coefficients for all six independent variables. Prop_w3 is defined as a sum of three lags of proprietors' income with a second degree polynomial weight and Corp is for corporate profits. W4 and w5 are defined in a same way with 4 lags and 5 lags respectively. We find that all coefficients are insignificant. These results are consistent with the findings with Table 2 and provide no evidence with support of a "trickle-down effect."

5. Conclusion

The purpose of this paper is to investigate the trickle-down effect in the United States economy using a simple empirical framework. We find that Gini coefficient decreases with current wage. This result suggests that an increase in wage leads to a more equal income distribution. However, we fail to establish any link between Gini coefficient and proprietors' income and corporate profits. These findings suggest an increase or a decrease in proprietors' income and corporate profit does not affect income equality. So, there is no "trickle-down" from proprietors' income and corporate profits to lower income group.

These results hold implications for policy. If a goal of US policy maker is to reduce income inequality, then government should increase its spending on human capital such as education and training, rather than relying on any "trickle-down" effect.

Appendix

Table A1: Descriptive Statistics

	Obs	Avg.	Std. Dev.	Min.	Max.
Gini coefficient	35	42.13	2.47	38.8	46.6
Wage	35	2098.85	1360.82	429	4942.8
Proprietors' income	35	299.87	206.9	69.8	771.9
Corporate profits	35	369.95	257.75	83.6	868.5

References

Aghion, P and P. Bolton (1997) "A Theory of Trickle-Down Growth and Development" *The Review of Economic Studies* **64**, 151-172.

Arndt, H. W. (1983) "The Trickle-down Myth" *Economic Development and Cultural Change* **32**, 1-10.

Matsuyama, K. (2000) "Endogenous Inequality" *The Review of Economic Studies* **67**, 743-759.

Michel, R. C. (1991) "Economic Growth and Income Equality since the 1982 Recession" *Journal of Policy Analysis and Management* **10**, 181-203.

Ruggles, P and C. Stone (1992) "Income Distribution over the Business Cycle: The 1980s Were Different" *Journal of Policy Analysis and Management* **11**, 709-715.

Tuckman, H and G. Brosch (1974) "Changes in Personal Income and Their Effect on Income Shares" *Southern Economic Journal* **41**, 78-86.