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Summary

Notwithstanding the often-repeated conventional wisdom that "small business" is responsible for most employment growth, the modern scholarly literature finds that it is new (and perhaps young) businesses—startups—that contribute disproportionately to both gross and net employment creation. This paper examines the effect of new business firms ("startup businesses") and net employment creation by those firms on state gross product, using a sample of 49 states for the period 1977 through 2010. A two-stage econometric model yields the following central empirical findings: An increase in the number of startup firms does not affect state gross product or its growth rate, but an increase in net job creation by startups has a positive effect on state gross product that is significant both economically and statistically. Each net job created by startup firms is estimated to increase state gross product by almost $1.2 million in a given year. There does not seem to be an effect of net job creation by startups on the growth rate of state gross product. This means that startup job creation shifts the trend line of state gross product upward, but does not increase its slope.

These findings combined with the existing scholarly literature on the effect of startup firms on net job creation suggest that policymakers should focus on both the ability of startup firms to establish themselves and to succeed, *and* the ability of startup firms to hire workers. Such policy initiatives as the Kauffman Foundation Startup Act can be predicted to further the goal of increasing the ease with which startup firms can be established, and thus to a degree the ability of the startup sector to create employment opportunities. But it is clear that further policy reform is a condition necessary if U.S. startup firms are to achieve more of their potential in terms of actual hiring and the attendant benefits in terms of aggregate output. A detailed discussion of such policy reforms is a topic beyond the scope of this study, but might focus upon such policy problems as the following:

- A reform of such recent government policies as the Dodd-Frank financial services reform legislation that has had the effect of increasing the competitive advantages of large banking institutions over smaller banks, the latter of which traditionally have specialized in providing capital for new and small businesses.
- The Affordable Care Act ("Obamacare") clearly has introduced rigidities, constraints, and incentives in the labor market that will lead to higher costs for labor force expansion, a substitution of part-time in place of full-time work, and other such perversities.
- Increases in the (real) minimum wage, whether mandated by federal or state legislation, will increase disincentives to hire.
- Current policies on immigration and work permits for foreigners have introduced serious rigidities into the labor market generally and for smaller businesses, startups, and particular sectors.

These and other policy reforms would take advantage of the empirical reality that it is startup firms that are responsible for almost all net job creation in the U.S. economy, and would facilitate that hiring and the increased economic output that would result.

This paper examines the effect of new business firms ("startup businesses") and net employment creation by those firms on state gross product

I. Introduction

This paper examines the effect of new business firms ("startup businesses") and net employment creation by those firms on state gross product, using a sample of 49 states for the period 1977 through 2010. For purposes of analysis here, startups are defined to be firms less than one year old. The hypothesis to be examined is straightforward: Since the modern economic literature shows that it is startups that account for virtually all net job creation, public policies that hinder the formation of startup firms are likely to impose losses in terms of both employment and aggregate output.

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Notwithstanding the often-repeated conventional wisdom that "small business" is responsible for most employment growth, the modern scholarly literature finds that it is new (and perhaps young) businesses—startups—that contribute disproportionately to both gross and net employment creation.[1] In a large and diverse economy characterized by constant shifts in demand and supply conditions across sectors, changes in observed macroeconomic conditions to a significant degree are the aggregation of the structural economic expansions and contractions of individual economic sectors. In that conceptualization, microeconomic shifts drive those macroeconomic changes. At the same time, changes in such macroeconomic conditions as the demand for money balances (the income velocity of money), unexpected expansions or contractions in the money supply, shifts in international economic conditions, and the like will engender aggregate expansions or contractions, the effects of which would be observed in the form of microeconomic shifts among those sectors. In this conceptualization, changes in macroeconomic parameters drive microeconomic sectoral shifts. Accordingly, both microeconomic changes (shifts in demand and supply conditions) and changes in macroeconomic parameters determine the trends that we measure, crudely, in employment, GDP growth, and the like. The analysis presented here focuses upon the former question, that is, the effect of mi-

1 See John Haltiwanger, Ron S. Jarmin, and Javier Miranda, "Who Creates Jobs? Small vs. Large vs. Young," working paper, August 2011, at http://econweb.umd.edu/~haltiwan/size_age_paper_R&R_Aug_16_2011.pdf, Figure 5; and Steven J. Davis and John Haltiwanger, "Gross Job Flows," in Orley C. Ashenfelter and David Card, eds., *Handbook of Labor Economics*, Vol. 3, New York: North Holland, 1999, Figures 2, 3, and 8. See also Tim Kane, "The Collapse of Startups in Job Creation," Hudson Institute, 2012, at http://www.hudson.org/files/publications/Kane--TheCollapseofStartupsinJobCreation0912web.pdf ; Tim Kane, "The Importance of Startups in Job Creation and Job Destruction," Ewing Marion Kauffman Foundation, July 2010, at http://www.kauffman.org/uploadedfiles/firm_formation_importance_of_startups.pdf; David Neumark, Brandon Wall, and Junfu Zhang, "Do Small Businesses Create More Jobs? New Evidence for the United States from the National Establishment Time Series," *Review of Economics and Statistics*, Vol. 93, No. 1 (February 2011), pp. 16-29; and Erik Hurst and Benjamin Wild Pugsley, "What Do Small Businesses Do?," *Brookings Papers on Economic Activity*, Vol. 43, No. 2 (Fall 2011), pp. 73-142. For a nontechnical discussion of the underlying economic processes, see Martin A. Sullivan, "Start-Ups, Not Small Businesses, Are Key to Job Creation," *Tax Analysis*, January 9, 2012, at http://taxprof.typepad.com/files/134tn158.pdf.

croeconomic fluctuations in the startup "sector"—the growth in the number of startups and startup employment—in terms of aggregate economic performance, as measured by gross domestic product at the state level, or state gross product. Such fluctuations might be the result of exogenous economic changes, or they might be the outcomes of such government policies as the Patient Protection and Affordable Care Act (the ACA, or "Obamacare").

The evidence on gross and net employment creation suggests that aggregate economic movements characterized by disproportionate growth or contraction of startup businesses would have very different employment implications than otherwise similar shifts characterized by disproportionate growth or contraction of such other sectors as large corporate manufacturing. This is not surprising, in that a large body of existing data on cyclical patterns of labor productivity suggests that medium and large (that is, established) businesses maintain employment levels less volatile than their outputs; this may be because their workforces are somewhat specialized to their respective firms (or industries) so that they attempt within limits to preserve their labor forces so as to reduce or avoid such future costs as that of training new employees.[2] This is consistent with the available evidence showing that employment at younger businesses is less durable than is the case for older firms, a natural result of the greater volatility of startup survival.[3]

Gross domestic private investment and personal consumption expenditures by far are the most important contributors to GDP growth, and it may be the case that recoveries and expansions characterized by significant startup activity can be predicted to have relatively favorable implications for the durability of economic growth.

Differences in the employment effects of alternative kinds of expansions and contractions—particularly in terms of the attendant effects on startup businesses—have important implications for policymakers. In terms of aggregate economic performance, it is easy to hypothesize that differences in startup and employment growth would result in differing outcomes for consumer spending (domestic final purchases), investment patterns, tax revenues at all levels of government, the degree of dependence on government transfer programs, and the like. In particular, the differing implications for the durability of economic recoveries and expansions are suggested by the data on contributions to GDP growth reported by the Bureau of Economic Analysis; gross domestic private investment and personal consumption expenditures by far are the most important contributors to GDP growth, and it may be the case that recoveries and expansions characterized by significant

2 See, e.g., Mark Gertler and Simon Gilchrist, "Monetary Policy, Business Cycles, and the Behavior of Small Manufacturing Firms," *Quarterly Journal of Economics*, Vol. 109, No. 2 (May 1994), pp. 309-340. See also Haltiwanger, *et. al.*, and Davis and Haltiwanger, *op. cit.* fn. 1 *supra*.

3 However, see Guiseppe Moscarini and Fabien Postel-Vinay, "The Contribution of Large and Small Employers to Job Creation in Times of High and Low Unemployment," *American Economic Review*, Vol. 102, No. 6 (October 2012), pp. 2509-2539 for a discussion of the correlation between firm size and job creation rates across business cycles. They find that the difference in employment growth rates between large and small firms in a given economic sector is strongly correlated negatively with the overall unemployment rate, that is, "Large employers on net destroy proportionally more jobs relative to small employers when unemployment is above trend… and create more when unemployment is below trend…"

startup activity can be predicted to have relatively favorable implications for the durability of economic growth.[4] For illustrative purposes, Figures 1 and 2 present those relationships for the period 1977-2011.[5]

Figure 1 Real GDP: Private Investment Contribution

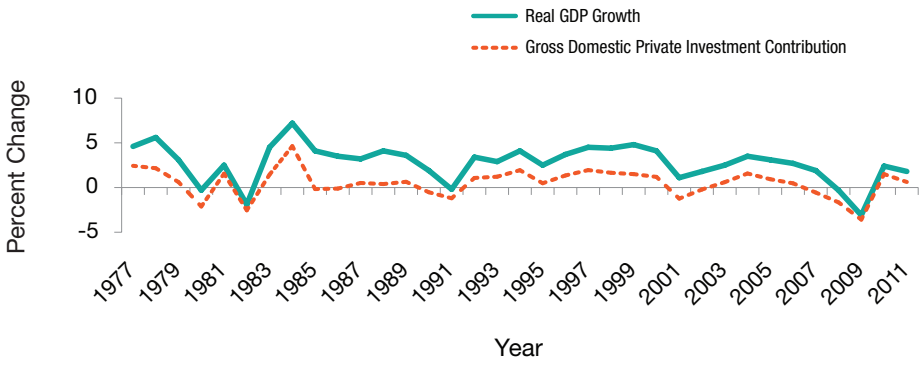
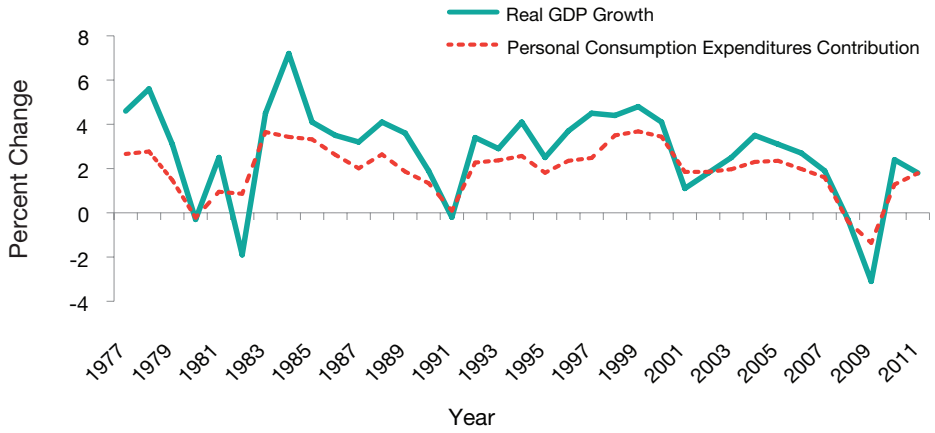


Figure 2 Real GDP: Personal Consumption Contribution



For Figures 1 and 2, the respective correlations are .918 and .889, meaning, roughly, that a change of 1 percent in private investment or in personal consumption is associated with a change in real GDP of roughly 0.9 percent. As noted above, government policies are likely to influence the rates at which startup businesses are formed and survive competitive pressures; Kane notes that net startup job creation is at its lowest rate (as a proportion of the U.S. population) since at least 1989.[6] Table 1 presents the aggregate U.S. data for net job creation by startup businesses less than one year old, for 1977-2010.

4 See the BEA data at http://www.bea.gov/iTable/iTable.cfm?ReqID=9&step=1.

5 See the BEA data at http://www.bea.gov/iTable/iTable.cfm?ReqID=9&step=1#reqid=9&step=1&isuri=1, Table 1.1.2.

6 See Kane, 2012, *op. cit.*, fn. 1 *supra.*, at 2-3.

Table 1 U.S. Startup Net Job Creation, Firms Less Than One Year Old

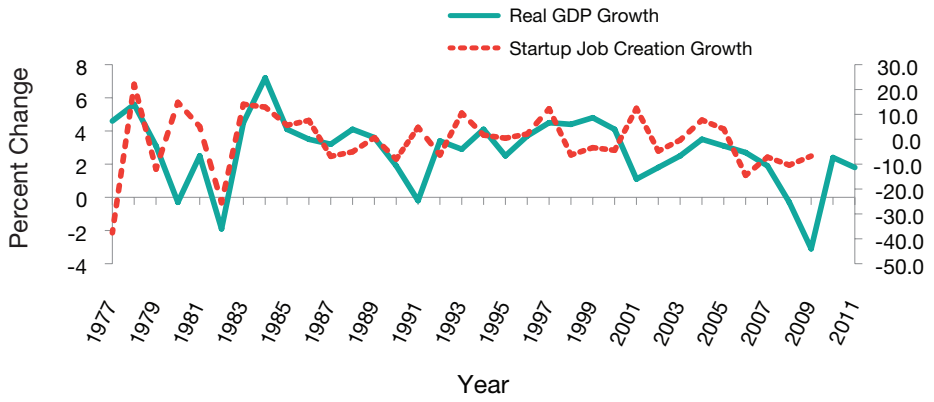
Year	Net Jobs Created (thousands)	Jobs Change (percent)	Real GDP Growth (percent)
1977	3717	n.a.	4.6
1978	2320	-37.6	5.6
1979	2832	22.1	3.1
1980	2492	-12.0	-0.3
1981	2862	14.8	2.5
1982	3008	5.1	-1.9
1983	2241	-25.5	4.5
1984	2556	14.1	7.2
1985	2886	12.9	4.1
1986	3049	5.6	3.5
1987	3280	7.6	3.2
1988	3055	- 6.9	4.1
1989	2901	- 5.0	3.6
1990	2919	0.6	1.9
1991	2686	- 8.0	-0.2
1992	2815	4.8	3.4
1993	2637	- 6.3	2.9
1994	2915	10.6	4.1
1995	2964	1.7	2.5
1996	2980	0.4	3.7
1997	3040	2.1	4.5
1998	3413	12.3	4.4
1999	3198	- 6.3	4.8
2000	3090	- 3.4	4.1
2001	2953	- 4.4	1.1
2002	3321	12.4	1.8
2003	3163	- 4.8	2.5
2004	3152	- 0.3	3.5
2005	3396	7.7	3.1
2006	3536	4.1	2.7
2007	3023	-14.5	1.9
2008	2806	- 7.2	-0.3
2009	2514	-10.4	-3.1
2010	2345	- 6.7	2.4

Source: U.S. Bureau of Census, Business Dynamics Statistics database at https://www.census.gov/ces/dataproducts/bds/data_firm.html (firm age); and Bureau of Economic Analysis at https://www.bea.gov/iTable/iTable.cfm?ReqID=9&step=1#reqid=9&step=1&isuri=1, Table 1.1.1.

n.a.: not available.

Table 1 shows that over the 34-year period, net startup job creation in 2010 was higher only relative to 1978 and 1983, despite a substantially higher U.S. working-age population of 237.8 million in 2010, versus 161.9 million and 174.2 million, respectively.[7] Figure 3 presents the time paths for the annual percent changes in real GDP and startup employment.

Figure 3 Real GDP and Startup Jobs



The simple correlation between those series is only about 0.10, which may make it reasonable to hypothesize that the creation of new firms is more important for the growth of aggregate employment than for the growth of real GDP. At the same time, the simple correlation between real GDP (in dollars) and the number of startup firms is higher, at 0.265. Kane notes that "the rate of startup jobs during 2010 and 2011, years that were technically in full recovery, are the lowest on record," declining even after the recession years of 2008-2009.[8] His computation of the startup job creation rate (per 1000 population) for the period 1989-2011 is summarized in Table 2.

Table 2 Tim Kane Estimates: Startup Job Creation Rate

Period	Rate
1989-1992	11.3
1993-2000	11.2
2001-2008	10.8
2009-2011	7.8

Source: Kane, 2012, *op. cit.*, fn. 1 *supra.*, at 3.
Note: 2011 interpolated.

7 See Federal Reserve Bank of St. Louis at http://research.stlouisfed.org/fred2/series/USAW-FPNA.

8 See Kane, 2012, *op. cit.*, fn. 1 *supra.*, at 3.

Kane's discussion does not analyze the sources of the decline shown in Table 2, but does offer several hypotheses:

- Increased federal taxes and heightened uncertainty about future taxation;[9]
- New regulations on the labor market;
- The costs associated with the implementation of the ACA;
- Tightened legal constraints on the use of workers defined as independent contractors rather than employees;
- Rising local policy barriers to the formation of startup businesses.

An analysis of the effects of these policy instruments would be highly complex, requiring a numerical definition of the policy tools, as well as an empirical estimate of their marginal impacts. That would require a massive database construction effort far beyond the scope of this study. However, states differ substantially in terms of their policy environments, and individual states adopt different policies over time. Those policy differences are likely to be reflected in state-level characteristics that a straightforward econometric approach might capture. Moreover, such analysis of state-level effects should provide evidence on the effect of startups and startup employment on state gross product, which can be viewed as an aggregate measure of macroeconomic conditions. Section II presents a simple two-stage econometric model of state gross product as a function of startup activity and other relevant variables, and a discussion of the dataset used for the analysis. Section III presents the econometric findings, while Section IV offers some concluding observations.

9 Kane does not distinguish in his discussion among higher tax rates, higher inframarginal taxes, the application of given tax rates to an expanded base, etc.

II. An Empirical Model

The empirical analysis presented in section III below applies a two-stage econometric model to a database of 49 states (excluding Alaska) for the period 1977-2010. For a given state in a given year, real state gross product or the growth of real state gross product[10] is assumed to be determined by the following variables:

- the number of startup firms or net job creation by startup firms;[11]
- total state employment;[12]
- total personal income;[13]
- total state and local government outlays;[14]
- the population with incomes below the federal poverty level;[15]
- pecuniary transfers from the federal government;[16]
- the growth rate of real GDP for the U.S.[17]

We include the number of startup firms or net job creation by those firms in order to test the hypothesis that startups are an important determinant of GDP or GDP growth, just as the modern literature has shown that startups are a crucial factor in terms of net job creation. Total state employment is included as a control for the size of the labor market, in order to avoid scale effects; in addition, a larger employment pool also is likely to be more diverse in terms of skills and productivity, perhaps offering a better environment for the success of startups. Total personal income is included as one measure of the aggregate state demand for goods and services. Total state and local government outlays is included as a measure of the demand for government output. The population of poor individuals is included as a measure of the

10 Data on state gross product obtained from the U.S. Bureau of Economic Analysis at http://www.bea.gov/iTable/iTable.cfm?ReqID=70&step=1&isuri=1&acrdn=1.

11 Data obtained from the U.S. Census Bureau, Business Dynamics Statistics data tables, at http://www.census.gov/ces/dataproducts/bds/data_firm.html, Firm Age by State.

12 Data obtained from the U.S. Bureau of Labor Statistics at http://www.bls.gov/lau/staadata.txt; and private communications with BLS staff.

13 Data obtained from the Bureau of Economic Analysis at http://www.bea.gov/iTable/iTable.cfm?ReqID=70&step=1&isuri=1&acrdn=4.

14 Data obtained from the U.S. Census Bureau at http://www.census.gov//govs/estimate/ and www.census.gov/prod/www/abs/statab1951-1994.htm; and by the U.S. Bureau of Economic Analysis at https://www.bea.gov/iTable/iTable.cfm?ReqID=9&step=1.

15 Data obtained from the U.S. Census Bureau at http://www.census.gov/hhes/www/poverty/data/historical/people.html (Table 21) and http://www.census.gov/hhes/www/censpov.html; and private communications with Census Bureau staff.

16 Data obtained from the U.S. Census Bureau at http://www.census.gov/prod/www/abs/fas.html, http://www.census.gov/govs/state/historical_data.html, U.S. Census Bureau *Reports about Governments*, various tables, at http://www.census.gov/govs/pubs/year.html, U.S. Census Bureau, *Government Finances*, various issues, and U.S. Census Bureau, *Census of Governments*, various issues.

17 Data obtained from the U.S. Bureau of Economic Analysis at http://www.bea.gov/iTable/iTable.cfm?ReqID=9&step=1#reqid=9&step=1&isuri=1, Table 1.1.1.

size of the relatively less-productive population. Pecuniary transfers from the federal government also is included as a measure of an income effect (or mandate effect) increasing the demand for government output. The growth rate of U.S. GDP is included as a proxy variable for general economic conditions affecting all states, but perhaps not proportionately.

By hypothesis, state gross product (or its growth rate) is determined in part by the number of startup firms or by the number of net jobs created by those firms. But the number of startup firms or jobs obviously is determined in part by state gross product or its growth rate. Accordingly, a two-stage econometric model is the appropriate estimation technique in the face of this "endogeneity" problem. Consider a police force that assigns heavier patrol duty in high-crime areas. In the absence of an equation predicting those patrolling decisions, a simple econometric model explaining crime rates as a function of the intensity of patrols (and other variables) is likely to predict that more police patrols are a cause of crime, because the econometric model will encounter a strong positive correlation between crime and police patrols, and the remaining variables controlling for the other factors that drive crime rates are unlikely to control for the decisionmaking of the police departments.[18] Because startup activity and hiring in a given state must be affected by economic conditions as reflected in state gross product, while the latter is likely to be affected by startup activity, a multi-equation econometric approach ("two-stage least squares") should be used.[19] That is the estimation technique used here.

The growth rate of U.S. GDP is included as a proxy variable for general economic conditions affecting all states, but perhaps not proportionately.

In accordance with standard practice, the results of the first-stage analysis—the prediction of the number of startup firms or net job creation by startups—are not reported here separately because the statistical consistency of the second-stage estimates of interest (state gross product or its growth) does not depend upon the consistency of the first stage. Only the statistical independence of the startup variables is needed, and the use of the predicted startup variables produced in the first-stage estimation process satisfies that

18 Another simple example would be an analysis of the effect of an insecticide on farmland infestations. Because farmers are likely to use insecticides more intensively on acres with greater infestations, a simple econometric model analyzing the effect of the insecticide on infestations is likely to find that the insecticide is healthful for the insects. The behavior of the farmers must be included in the model.

19 As an aside, because in the econometric estimates for each individual state (discussed below) the error terms are likely to be correlated, an increase in the efficiency of the estimates might be achieved through the use of the three-stage least squares estimator. That minor complication is ignored here, in part because of the large number of observations for each state and for the sample as a whole.

condition.[20] The variables used in the first-stage equation to predict the number of startup firms or net startup job creation are as follows:

- state gross product or its growth rate;
- total personal income;
- total state and local government outlays;
- the size of the state labor force;[21]
- the number of unemployed;[22]
- the population with incomes below the federal poverty level;
- pecuniary transfers from the federal government;
- a zero-one ("dummy") variable denoting whether the governor is a Republican;
- a dummy variable denoting whether the upper legislative chamber is controlled by the Republicans;
- a dummy variable denoting whether the lower legislative chamber is controlled by the Republicans (for Nebraska, the unicameral legislature is treated as having two houses controlled by the same party); and
- the growth rate of real GDP for the U.S.

State gross product (or its growth rate) is included in the first stage analysis so as to address the endogeneity issue discussed above; state gross product and startup activity are hypothesized to be functions of each other. Total personal income is included as a proxy variable for demand conditions affecting startup activity, growth, and hiring. The same is true for state and local government outlays in the context of goods and services provided publicly. The labor force is a control variable for the size of the labor market, while the number of unemployed is a proxy for local market conditions after controlling for the size of the market. The population of poor individuals is a measure of the demand for particular kinds of government services that startups may or may not have a comparative advantage in providing. Similarly, transfers from the federal government may affect the demand for the types of outputs that startups provide. The three "Republican" zero-one variables are assumed to serve as a group of proxy variables for the tax and regulatory climate affecting startup activity. Finally, the growth rate of U.S. GDP, again, is intended as a measure of general economic conditions affecting all states.

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20 See Harry H. Kelejian, "Two-Stage Least Squares and Econometric Systems Linear in Parameters but Nonlinear in the Endogenous Variables," *Journal of the American Statistical Association*, Vol. 66, Issue 334 (June 1971), pp. 373-374. See also, Joshua D. Angrist and Alan B. Krueger, "Instrumental Variables and the Search for Identification From Supply and Demand to Natural Experiments," National Bureau of Economic Research, Working Paper 8546, September 2001, at http://www.nber.org/papers/w8456.

21 Data obtained from the U.S. Bureau of Labor Statistics at http://www.bls.gov/lau/staadata.txt.

22 *Ibid.*

III. Empirical Findings

As noted above, the econometric findings are derived from a sample of 49 states for the thirty-four year period 1977-2010. Table 3 presents the estimated coefficients (and t-statistics) for the equations analyzing the effect of startup firms and net job creation by startups on state gross product and the growth of state gross product.

Table 3
Estimated Coefficients (t-statistics): Pooled Sample

Explanatory Variable	Dependent Variable			
	SGP	SGP	SGP growth	SGP growth
Startup firms	3.38		0.43	
	(1.52)		(1.50)	
Startup net job creation		1.16		0.05
		(2.68)		(1.05)
Total employment	7.25	-5.14	2.77	-2.24
	(0.81)	(-0.51)	(2.32)	(-0.92)
Total personal income	0.68	0.60	0.02	0.01
	(15.10)	(11.55)	(2.88)	(2.28)
State and local outlays	0.93	1.30	-0.08	-0.04
	(3.04)	(5.96)	(-1.92)	(-1.33)
Poor population	13.89	0.07	0.82	0.92
	(2.05)	(0.01)	(0.93)	(0.87)
Federal transfers	1.21	1.56	0.10	-0.02
	(0.95)	(1.57)	(0.65)	(-0.15)
U.S. GDP growth	1458.54	1645.08	0.14	0.13
	(3.85)	(3.81)	(2.39)	(2.28)
constant term	-1657.48	3104.29	2.79	2.90
	(-0.98)	(1.11)	(11.36)	(9.38)
pseudo adj. R2	0.990	0.987	0.239	0.138

Source: author computations

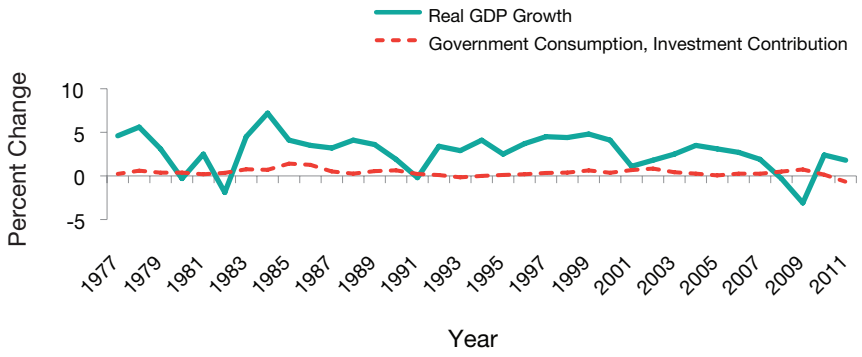
The effect of startup firms on state gross product is not statistically significant at the standard 5 percent significance level (95 percent confidence level); but net job creation by startups is highly significant statistically. The estimated coefficient suggests that each net job created by a startup firm increases state gross product by a bit less than $1.2 million in a given year. Neither startup firms nor net job creation by startups has a statistically significant effect on the growth rate of state gross product. *Accordingly, these findings suggest that net job creation by startup—rather than the establishment of the startup firms themselves—has the effect of shifting the time trend of state gross product upward, while leaving the slope (that is, the growth rate) unchanged.*

The empirical findings do not suggest that total state employment—as distinct from net startup employment—has a consistent effect on either state gross product or its growth rate; only the estimated equation for the growth rate controlling for the number of startup firms shows statistical significance for this variable. An increase in total personal income of $1 billion is predicted to increase state gross product by about $600-680 million, and the growth rate of state gross product (the slope of the trend line) by a very small amount. Interestingly, an increase of $1 billion in state and local outlays is predicted to increase state gross product by about $1 billion; but the effect on the growth rate is negative or does not differ from zero as a matter of statistical significance. Because state gross product in the national accounts essentially is an accounting summary of private and government spending, it is likely to be the case that the government outlays variable is measuring little more than an accounting identity. But the effect of state and local outlays on growth rates either does not differ from zero or is negative, suggesting that there is no "multiplier" effect or that government spending has marginal effects that are wasteful. This is consistent with the contribution of government spending to real U.S. GDP growth, as illustrated in Figure 4.[23] The government outlays contribution to real GDP growth is effectively zero economically, and does not differ from zero as a matter of statistical significance.[24]

23 Derived from data reported by the U.S. Bureau of Economic Analysis at http://www.bea.gov/iTable/iTable.cfm?ReqID=9&step=1#reqid=9&step=1&isuri=1, Table 1.1.2.

24 The simple correlation is only 0.079.

Figure 4 **Real GDP:** Government Contribution



The findings shown in Table 3 do not support an inference that the size of the population below the poverty line has much effect on either state gross product or its growth rate; the variable is statistically significant only for state gross product when startup firms is included in the estimated equation. Nor are federal revenue transfers estimated to have a statistically significant effect. General economic conditions in the U.S., as measured by the growth rate of real GDP, do affect state gross product and its growth rate: A one percent increase in real U.S. GDP growth is predicted to increase state gross product by about $1.5 billion, and about 0.13 percentage points in terms of growth rates.[25]

25 The effect upon state gross product of about $1.5 billion seems small, but we should bear in mind that an increase in U.S. GDP growth would comprise differing effects across sectors and geographic regions, with resources flowing among them.

IV. Conclusions

A two-stage econometric model estimated with a database of 49 states over the period 1977-2010 yields the following central empirical findings: An increase in the number of startup firms does not affect state gross product or its growth rate, but an increase in net job creation by startups has a positive effect on state gross product that is significant both economically and statistically. Each net job created by startup firms is estimated to increase state gross product by almost $1.2 million in a given year. There does not seem to be an effect of net job creation by startups on the growth rate of state gross product. This means that startup job creation shifts the trend line of state gross product upward, but does not increase its slope.

These findings combined with the existing scholarly literature on the effect of startup firms on net job creation suggest that policymakers should focus on both the ability of startup firms to establish themselves and to succeed, *and* the ability of startup firms to hire workers. Such policy initiatives as the Kauffman Foundation Startup Act can be predicted to further the goal of increasing the ease with startup firms can be established, and thus to a degree the ability of the startup sector to create employment opportunities.[26] But it is clear that further policy reform is a condition necessary if U.S. startup firms are to achieve more of their potential in terms of actual hiring and the attendant benefits in terms of aggregate output. A detailed discussion of such policy reforms is a topic beyond the scope of this study, but might focus upon such policy problems as the following:

- Such recent government policies as the Dodd-Frank financial services reform legislation has had the effect of increasing the competitive advantages of large banking institutions over smaller banks, the latter of which traditionally have specialized in providing capital for new and small businesses.[27] The current and prospective policy of the Federal Reserve to maintain low interest rates, whatever its other advantages and disadvantages, is likely to exacerbate this problem by reducing expected returns to private-sector lending. Other important regulatory requirements emerging as congressional responses to the 2008 financial crisis are likely to impose operating costs on financial institutions with which it is easier for larger banks to comply; that is, the regulations are likely to increase scale economies artificially.

An increase in the number of startup firms does not affect state gross product or its growth rate, but an increase in net job creation by startups has a positive effect on state gross product that is significant both economically and statistically.

26 See the central parameters of the Startup Act at http://www.kauffman.org/research-and-policy/startup-act.aspx.

27 For a brief discussion, see James Pethokoukis, "Are We Suffocating Entrepreneurs and 'Start-Up America?'", AEIdeas.org, December 18, 2012, at http://www.aei-ideas.org/2012/12/are-we-suffocating-entrepreneurs-and-start-up-america/.

- The Affordable Care Act ("Obamacare") clearly has introduced rigidities, constraints, and incentives in the labor market that will lead to higher costs for labor force expansion, a substitution of part-time in place of full-time work, and other such perversities.[28] The Act also will reduce the supply of labor by increasing implicit marginal tax rates faced by employees.[29]
- Increases in the (real) minimum wage, whether mandated by federal or state legislation, will increase disincentives to hire.[30]
- Current policies on immigration and work permits for foreigners have introduced serious rigidities into the labor market generally and for smaller businesses, startups, and particular sectors.[31]

These and other policy reforms would take advantage of the empirical reality that it is startup firms that are responsible for almost all net job creation in the U.S. economy, and would facilitate that hiring and the increased economic output that would result.

28 For a summary of the provisions of the ACA, see http://www.healthcare.gov/law/timeline/full.html.

29 See, e.g., Drew Gonshorowski, "The Affordable Care Act Negatively Impacts the Supply of Labor," Heritage Foundation Issue Brief No. 3873, March 11, 2013, at http://thf_media.s3.amazonaws.com/2013/pdf/ib3873.pdf.

30 See, e.g., David Neumark and J.M. Ian Salas, "Revisiting the Minimum Wage-Employment Debate: Throwing Out the Baby With the Bathwater"?, working paper, September 2012, at http://www.econ.ucsb.edu/~pjkuhn/Ec250A/Readings/Neumark_etal_Bathwater.pdf.

31 See, e.g., National Foundation for American Policy, "H-1B Visas and Job Creation," NFAP Policy Brief, March 2008, at http://www.nfap.com/pdf/080311h1b.pdf. See also Michael Beckerman, "Give More Visas to Foreign-Born Workers," CNN.com, April 1, 2013, at http://www.cnn.com/2013/04/01/opinion/beckerman-immigration-visa.

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