



Does Dodd Frank Act Affect Macroeconomic Variables?

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I. Introduction:

The relationship between financial regulations and economic growth has been among the most controversial topics in financial economics. The post 2007 great recession has observed an over-shooting of regulations because policy makers have been convinced that regulations reduce the possibility of financial crisis. Though some economists believe that the root of 2007 financial crisis was the lack of effective financial regulations, others believe that financial system has been over-regulated and therefore, introduction of Dodd Frank Act will certainly contribute to crowding out effect of private investment, which in turn, leads to lower GDP growth and higher unemployment rate. To investigate how financial regulations affect macroeconomic variables such as GDP growth, private investment and unemployment rate, this study implements econometric models and a dummy variable for the periods that a new financial legislation has been introduced (as described in Appendix 1) to measure the effects of financial regulations on macroeconomic variables.

II. Literature Review:

De Serre et al. (2006) argue there are two main transmission channels that financial regulations affect real sector economy: (i) the first channel is through effect of regulations on higher lending rates or cost of credit, which lead to lower investment and GDP growth (ii) the second channel is through creation of uncertainty in the market, which leads to slower capital formation and lower GDP growth.

They investigate the effects of financial regulations on economic growth among OECD countries. Their study examines whether regulation that facilitates competition in the banking sector has a significant positive impact on sectoral output growth and productivity growth. Using a panel regression model they indicate that financial regulation has a statistically significant impact on output and productivity growth. Their results indicate that financial reforms in countries that have restrictive banking regulations compared to OECD average, is associated with an increase in GDP growth by $\frac{1}{4}$ to $\frac{1}{2}$ percentage point.

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Gatti & Vaubourg (2009) use data for 18 OECD countries over the period of 1980-2004 to see how financial sector factors affect unemployment rate. They find that the effect of financial market variables strongly depends on labour market regulations and conclude that reducing banking concentration will reduce unemployment rate if the labour market is not highly regulated.

Jomin (2011) investigates the effects of financial regulations on the real economy. Using econometric model for a group of OECD countries he estimates the effects of regulation on GDP growth and finds that 5% increase in credit cost arising from additional financial regulations leads to 0.5 to 1% reduction in GDP growth.

Haidar (2012) measures the impact of business regulatory reforms on economic growth for 172 countries over the period of 2006-2010. He finds a positive robust impact of regulatory reform on economic growth. His results indicate that each additional regulatory reform during 2006-2010 is associated with 0.15% increase in economic growth.

Aghion & Kharoubbi (2013) use cross country data for OECD countries to investigate the effects of cyclical macroeconomic policy and financial sector characteristic on economic growth and labor productivity. They argue that higher capital adequacy ratio can be helpful in reducing systemic risk; however, it may adversely affect industries with lowest asset intangibility. This finding emphasizes the importance of optimal designing of financial regulations together with monetary policy in order to reconcile financial stability and economic growth.

Hagen (2013) uses econometric models with cross-country data to measure the effects of financial regulations on macroeconomic variables. The data in this study cover 88 countries over the period of 1973-2005. He uses index of financial liberalization, which has a value of zero for fully depressed and 21 for fully liberalized financial markets. He finds that countries with more deregulated financial markets experienced deeper recession stronger employment losses and larger government budget deficits. Therefore, he conjectures that the effectiveness of financial liberalization for macroeconomic stability and economic development should be rigorously reconsidered.

Covas & Driscoll (2014) use a non-linear general equilibrium model in the banking sector to measure the effects of regulatory standards on macroeconomic variables. Based on their results imposing a liquidity requirement would lead to about 3% reduction in the amount of loans, and a decline in output of about 0.3%.

Indeed, none of the studies in the literature has focused on the quantitative effects of financial regulations on macroeconomic variables in the United States. Interestingly enough, the literature has mainly focused on OECD countries, which have different macroeconomic fundamentals from the U.S. economy. To fill the gap in the literature, this study tries to estimate the effects of financial regulations on macroeconomic variables in the U.S. economy. The effects of financial regulations on macroeconomic

variables in the U.S. might be bigger than OECD countries because it has experienced more frequent financial regulations compared to OECD countries average.

III. Methodology & Hypotheses:

To estimate the effects of financial regulations on macroeconomic variables such as economic growth, investment, and unemployment rate, this study implements a quantitative research methodology, using econometric techniques with quarterly data over the period of 1990-2015 to test the following hypotheses.

H_{a0}: Financial regulation has a statistically significant negative impact on GDP growth.

H_{a1}: Financial regulation doesn't have a statistically significant negative impact on GDP growth.

H_{b0}: Financial regulation has a statistically significant negative impact on private investment.

H_{b1}: Financial regulation doesn't have a statistically significant negative impact on private investment.

H_{c0}: Financial regulation has a statistically significant positive impact on unemployment rate.

H_{c1}: Financial regulation doesn't have a statistically significant positive impact on unemployment rate.

The results of this study will have important policy implications for policy makers and financial institutions because it will inform them about the macroeconomic outcomes of imposing more financial regulations. Unfortunately, there are only a few empirical studies on the topic, which have mainly focused on the OECD countries. The novel feature of this study is that it will focus on the U.S. economy because financial sector in the U.S. economy is one of the most regulated sectors and has experienced more frequent regulations compared to other OECD countries.

IV. Data and Estimated Results:

The data in this study is quarterly and covers the period of 1990- 2015 because several pieces of financial legislations have been approved during this period. The data on macroeconomic variables have been retrieved from the Federal Reserve Bank of St Louis and the World Bank websites. Table 1 represents the list of variables that are used in the following econometric models.

This study implements three main econometric models, where each model estimates the effects of financial regulations on GDP growth, private investment, and unemployment rate.

Following De Serre A. et al. (2006) the first model estimates the effects of financial regulations on GDP growth; where GDP growth is a function of independent variables such as fixed capital formation, labor force, financial deepening measured by M2/GDP,

government expenditures, interest rate, and financial regulations, measured by a dummy variable for the periods that a new piece of financial legislation has been introduced to the economy. To check whether our model and the relationship between these variables are meaningful we use Dickey Fuller cointegration test. If variables have different trend processes, they cannot stay in long-run relation to each other and the regression results will be spurious. The reason we use Dickey Fuller test is that it is simple and there is no better alternative (Bo Sjo 2008). We find that at 99% level of confidence the Dickey Fuller test for the above variables is 2.86, which is greater than the amount of Table (2.16). This means the above mentioned variables are stationary and cointegrated of degree zero $I(0)$; therefore, the regression results are valid and robust in the long-run. Also, the Durbin Watson test result suggests that there is not autocorrelation among error terms and residual are independently distributed. Therefore, our results are robust and reliable.

Table 1. List of macroeconomic variables:

GDP	Gross Domestic Production at constant prices
K	Capital stock
L	Labor force
M2	Money supply
EXP	Government expenditures
i	Short-term interest rate
INV	Private investment
Unemploy	Unemployment rate
Wage	Hourly wage rate
Dummy	1 for the quarters that a new financial regulation has been introduced and zero for the rest. Those period have been introduced in Appendix 1.

The estimated result of this model is as follows:

$$\overset{0}{GDP} = 113 + 0.14K + 0.10L + 0.05(M2 / GDP) + 0.17EXP - 0.02i - 0.41Dummy$$

(1.96) (3.24) (4.15) (1.85) (2.15) (2.76)

R-squared=91% F=24.56 DW=1.8

All variables are statistically significant and of the expected sign. The coefficient on the dummy variable suggests that the financial legislations have a significant negative impact of 0.41 percent on GDP growth and Dodd Frank Act is no exception to this since it has been included among the financial regulations imposed in 2010. The list of financial regulations during this period can be found in Appendix 1. Indeed, the dummy variable is one for the periods that a new financial legislation has been introduced as described in Table 1, and zero for other years. Therefore, we assume that Dodd Frank Act affects macroeconomic variables like pervious financial legislations including Gramm Leach Bliely Financial Services Modernization Act of 1999 and Sarbanes-Oxley Act of 2002. However, we should bear in mind that the Dodd Frank Act may have even more severe effects on macroeconomic variables than previous financial legislations because it is more comprehensive and more complicated than previous legislations.

As many empirical studies including Jomin (2011) have argued financial regulations increases the cost of credit by 5%, which have been calibrated into the model. Indeed, the second channel that operates through 5% higher interest rate as suggested in the literature has a significant negative impact of 0.1 percent on GDP growth ($0.05 \times 0.02 = 0.10\%$); and therefore, the sum of the two channels will amount to a 0.51 percent reduction in GDP growth, which is very close to the number found by Jomin (2011).

The second model estimates the effects of financial regulations on the private investment; where the dependent variable, private investment, is a function of short term interest rate, GDP, government expenditures, and financial regulations, measured by a dummy variable for the periods that a new financial legislation has been introduced. The estimated results for private investment are as follows:

$$INV = 201.56 + 0.22GDP + 0.14EXP - 0.04i - 0.7Dummy$$

$$(3.15) \quad (2.87) \quad (3.78) \quad (2.96)$$

$$R\text{-squared}=88\% \quad F=203.24 \quad DW=2.4$$

As it can be seen in the above equation the independent variables are able to explain more than 88% of changes in private investment and all variables are of the expected sign and statistically significant. The coefficient on dummy variable is -0.7, meaning that introduction of a new financial legislation including Dodd Frank Act will lead to 0.7% reduction in private investment. Moreover, since the cost of credit will increase by 0.05, the indirect effect through higher interest rate would be ($0.05 \times 0.04 = 0.2\%$).

Therefore, introduction of this new financial legislation will lead to 0.9% lower private investment.

Finally, following Gatti & Vaubourg (2009) the third model estimates the effects of financial regulations on unemployment rate; where the dependent variable, unemployment rate, is a function of private investment, wage rate, GDP growth, the ratio of credit to GDP, short-term interest rate, and a dummy variable for the periods that new legislation have been introduced. The estimated results are as follows:

$$Unemploy = 136.75 - 0.13INV + 0.17Wage - 0.15GDP - 0.22M2/GDP + 0.12i + 0.76Dummy$$

(2.16) (1.89) (2.78) (3.47) (1.78) (2.14)

R-squared=93% F=122.57 DW=2.11

As it can be seen in the above equation, the independent variables are able to explain more than 93% of changes in unemployment rate and all variables are statistically significant and of the expected signs. The coefficient on the dummy variable is 0.76, meaning that imposing a new financial legislation like Dodd Frank Act will lead to 0.7% higher unemployment rate. Indeed, financial regulations will lead to lower investment opportunities, which lead to higher unemployment rate, in turn. Therefore, the results in this study support the idea that Dodd Frank Act, like any other financial legislations increases unemployment losses. Therefore, to avoid future financial crisis policy makers need to think of other monetary instruments rather than financial legislations.

V. Conclusion:

This study uses a quantitative research methodology with time series data, which covers the period of 1990 to 2015, to estimate the effects of financial legislations including Dodd Frank Act on GDP growth, investment, and unemployment rate. The estimated results of this study show that there are statistically significant negative impacts from financial regulations on macroeconomic variables. Implementing a new legislation like Dodd Frank Act will lead to 0.51% lower GDP growth, 0.9% lower private investment, and 0.7% higher unemployment rate which is detrimental to the recovery of the U.S. economy. The results of this study are very close to those of Jomin (2011) who finds a new financial regulation leads to 0.5 to 1% reduction in GDP growth in OECD countries. Therefore, policy makers need to be aware of the negative outcomes of such repressive financial legislations on the economy and restore to more reliable monetary instruments instead of financial repressions.

Appendix-1: The years that a new financial legislation has been introduced.

1991	Federal Deposit Insurance Corporation Improvement Act (FDICIA)
1994	Riegle-Neal Insurance Banking & Branching Efficiency Act of 1994
1999	Gramm Leach Bliely Financial Services Modernization Act of 1999
2002	Sarbanes-Oxley Act of 2002
2005	Federal Deposit Insurance Reform Act of 2005
2010	Dodd Frank Act Wall Street Reform & Consumer Protection Act of 2010

References:

- Aghion, P. & E. Kharoubbi (2013). Cyclical macroeconomic policy, financial regulation and economic growth, *BIS Working Paper No. 434*. Retrieved from: <http://www.bis.org/events/conf130620/aghionkharoubi.pdf>
- Covas, F. & J. Driscoll. (2014) Bank liquidity and capital regulation in general equilibrium, *Finance and Economics Discussion Series*, Division of Research and Statistics and Monetary Affairs, Federal Reserve Board, Washington D.C. Retrieved from: <https://www.federalreserve.gov/econresdata/feds/2014/files/201485pap.pdf>
- Cetorelli, N. and P. Strahan (2006). Finance as a barrier to entry: Bank competition and industry structure in local U.S. markets, *The Journal of Finance*, Vol LXI, No.1. Retrieved from: http://www1.worldbank.org/finance/assets/images/cetorelli_strahan_1104.pdf
- De Serre A., S. Kobayakawa S., T. Slok, & L. Vartia. (2006). Regulations of financial system and economic growth in OECD Countries: An Empirical Analysis, *OECD Economic Studies No. 43*. Retrieved from: <https://www.oecd.org/eco/growth/40505986.pdf>
- GAO. (2013). Financial regulatory reform: Financial crisis losses and potential impacts of the Dodd Frank Act, GAO 13-180. Retrieved from: <http://www.gao.gov/assets/660/651322.pdf>
- Gatti, D. & A. Vaubourg (2009). Unemployment and finance: How do financial and labor market factors interact, *IZA, Discussion Paper 4075*. Retrieved from: <http://ftp.iza.org/dp4075.pdf>
- Guiso L., T. Japelli, M. Padula, & M. Pagano (2004). EU finance and growth, *Economic Policy*, October 2004.
- Hagedorn M., F. Karahan, I. Manovskii, & K. Mittman (2015). Unemployment benefits and unemployment in the Great Recession: The role of macro effects, Federal Reserve Bank of New York. Retrieved from: https://www.newyorkfed.org/medialibrary/media/research/staff_reports/sr646.pdf
- Hagen T. (2013). Impact of National Financial Regulation on Macroeconomic and Fiscal Performance after the 2007 Financial Shock, Econometric Analyses Based on Cross Country Data, *Economics Discussion Paper No. 2013-26*. Retrieved from: <http://www.economics-ejournal.org/economics/discussionpapers/2013-26/file>

- Haidar, J. I. (2012). The impact of business regulatory reforms on economic growth, *Journal of Japanese and International Economies*, Vol 26, PP 285-307. Retrieved from: <http://www.parisschoolofeconomics.eu/docs/haidar-jamal-ibrahim/jjie.pdf>
- Jomini P. (2011). Effects of inappropriate financial regulation, *Science Po, Groupe d' Economie Mondiale, Policy Brief* March 2011. Retrieved from: http://gem.sciences-po.fr/content/publications/pdf/Jomini_FinancialRegulation032011.pdf
- KUNGL VETENSKAPSAKADEMIEN (2003). Time Series Econometrics: Cointegration and Autoregressive Conditional Heteroscedasticity , Bank of Sweden. Retrieved from: https://www.kva.se/globalassets/priser/nobel/2003/sciback_ek_en_03.pdf
- La Porta R., F. De Silanes & A. Shleifer (2002). Government ownership of banks, *The Journal of Finance*, Vol 57, No.1. Retrieved from: <http://onlinelibrary.wiley.com/doi/10.1111/1540-6261.00422/abstract>
- Lorenzo E., B. Verdugo, D. Frueceri, & D. Guillaume (2012). Crises, labor market policy and unemployment, *IMF, WP* 12/65. Retrieved from: <https://www.imf.org/external/pubs/ft/wp/2012/wp1265.pdf>
- Masur J.S., & E. A. Posner (2011). Regulations, unemployment, and cost benefit analysis, University of Chicago, *John M. Olin Law & Economics*, Working Paper No.571. Retrieved from: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1920441
- Nanto D. (2009). The global financial crisis: Analysis and policy implications, Congressional Research Service, RL34742. Retrieved from: <https://www.fas.org/sgp/crs/misc/RL34742.pdf>
- Sjo B. (2008). Testing for Unit Roots and Cointegration. Retrieved from: <https://www.iei.liu.se/nek/ekonometrisk-teori-7-5-hp-730a07/labbar/1.233753/dfdistrib7b.pdf>
- White, L. (2011) Preventing bubbles: What role for financial regulations? *Cato Journal*, Vol. 31, No.3. Retrieved from: <http://object.cato.org/sites/cato.org/files/serials/files/cato-journal/2011/9/cj31n3-12.pdf>

