

Bank Characteristics and the Debt Guarantee Program

Anna-Leigh Stone ^a, and Matthew Faulkner ^b

^a Samford University, USA

^b San José State University, USA

We investigate characteristics of bank holding companies (BHCs) that issued debt under the 2008 Debt Guarantee Program (DGP), a novel topic in the literature. We find that BHCs with more equity, that were less efficient, and had a larger funding gap were less likely to issue DGP debt. But BHCs with a higher loan growth and higher volatility of assets were more likely to issue DGP debt. Finally, the economy affected the decision; we document that as the economy improved BHCs were less likely to issue DGP debt and issued a smaller proportion of DGP debt in terms of total assets and total debt. Furthermore, we examine if personal and professional characteristics of Chief Executive Officers (CEOs) influenced the decision. Of the CEO characteristics, we document that BHCs with a CEO with a Master of Business Administration issued lower amounts of DGP debt as a percentage of total assets.

JEL Classification: G20, G40, G38, G32, G01

Keywords: Behavioral Finance, Financial Crisis, CEO, Debt Guarantee Program, Bank Holding Company

1. Introduction

It is not uncommon for the United States government to intervene in times of economic uncertainty for financial institutions. However, there exists little research on the factors that influence financial institutions to participate in these government programs. We examine the characteristics of Bank Holding Companies (BHC) that issued debt under the Federal Deposit Insurance Corporation's (FDIC) Debt Guarantee Program (DGP).

The DGP was enacted on October 14, 2008 and provided an FDIC guarantee on new debt issued between October 14, 2008 and October 31, 2009. The debt was guaranteed through maturity or December 31, 2012, whichever was sooner. While all banks were automatically included in the DGP, they were given until December 5, 2008 to opt-out.¹ Once a bank opted out, it was excluded from rejoining. If a bank stayed in the program, it was assessed a 75-basis point fee on new debt issued under the program.

First, we examine characteristics of BHCs that issued debt under the program. We find that BHCs with more equity, that were less efficient, and had a larger funding gap were less likely to issue DGP debt. But BHCs with a higher loan growth and higher volatility of assets were more likely to issue DGP debt. Finally, the economy affected the decision, and we document that as the economy improved BHCs were

¹ The list of banks that opted-out are provided on the FDIC's website: <https://www.fdic.gov/regulations/resources/tlgp/archive.html>.

less likely to issue DGP debt and issued a smaller proportion of DGP debt in terms of total assets and total debt.

Moreover, we add to the literature by examining the personal and professional characteristics of BHC Chief Executive Officers (CEOs) and the decision to issue debt under the DGP. While we find little effect of CEO characteristics on the decision to issue DGP debt, we find that BHCs with a CEO with a Master of Business Administration (MBA) issued a lower amount of debt as a percentage of total assets.

Our research provides contributions to academics and policymakers. First, it provides insight for policymakers to consider when implementing future government intervention programs. The limited attention given to the DGP in finance literature is unfortunate given its potential in shaping future liquidity programs.² Second, it enriches literature about the decision-making of BHC CEOs and the influence of CEO professional and personal characteristics on decision-making around debt issuance in the DGP.

2. Data, Baseline Model, and Results

2.1 Data

While the DGP debt issuance data are reported at a bank and BHC level, all banks within a BHC were required to make uniform decisions regarding participation in the DGP.³ Thus, we start with all banks that participated in the DGP and aggregate bank-level data from the Federal Financial Institutions Examination Council (FFIEC) to the BHC level by using the unique regulatory identification number (RSSD ID). The sample period is from 2008Q4 until 2009Q4 and covers approximately 2,700 BHCs.

Table 1: DGP Debt Issuers

Panel A: Full Sample			
Time	Non-Issuers	Issuers	Total
2008Q4	2701	41	2742
2009Q1	2681	45	2726
2009Q2	2700	14	2714
2009Q3	2695	7	2702
2009Q4	2678	4	2682
Total	13455	111	13566
Panel B: CEO Characteristics			
2008Q4	68	19	87
2009Q1	63	18	81
2009Q2	71	10	81
2009Q3	79	4	83
2009Q4	79	3	82
Total	360	54	414

Note: This table displays the data for the DGP Debt Issuers.

In our sample, a total of one hundred and eleven debt issuances were made by

² The research on the DGP primarily focuses on its effects on liquidity and credit spreads (e.g. Amborse, et al. 2013; Black, et al. 2014; Black, et al. 2016).

³ <https://www.fdic.gov/regulations/resources/TLGP/faq.html>

BHCs over the course of the five quarters of the DGP. Panel A of Table 1 summarizes the total number of debt issuances. We see the number of BHCs that issued debt under the program was far greater at the start of the program than at the end. Furthermore, only a small percentage of the BHCs that remained in the DGP chose to issue debt under the program.

2.2 Model

To examine the relationship between BHC characteristics and debt issuance under the DGP, we present Equation (1).

$$DGP\ Issuance_{i,t} = a_0 + \delta \mathbf{X}_{i,t} + \gamma \boldsymbol{\Psi}_t + \alpha_i + \varepsilon_{i,t} \quad (1)$$

$DGP\ Issuance_{i,t}$, is one of three dependent variables. The first, $DGP\ Dummy_{i,t}$, is a dummy variable equal to one if the BHC issued debt under the DGP that quarter, and zero otherwise. The second, $DGP\ to\ Assets_{i,t}$, is the amount of DGP guaranteed debt issued that quarter as a percentage of total assets as of the previous quarter.⁴ The third, $DGP\ to\ Debt_{i,t}$, is the amount of DGP guaranteed debt issued that quarter as a percentage of total debt as of the previous quarter.

$\mathbf{X}_{i,t}$ is a vector of BHC-specific accounting variables intending to proxy for a BHC's CAMELS rating. The variables include the equity capital ratio to proxy for capital adequacy, loan charge-off to proxy for asset quality, efficiency ratio to proxy for management quality, return on assets (ROA) to proxy for earnings, liquidity ratio to proxy for liquidity, and funding gap to proxy for sensitivity to market risk. We include other variables to measure changes in BHC policies: the one-quarter change in loans, the natural log of total assets, the standard deviation of assets over the prior year, and a dummy variable indicating whether the bank received TARP funds. All variables are defined in Appendix Table A.1

$\boldsymbol{\Psi}_t$ is a vector of two macroeconomic variables: the one-quarter growth rates in real gross domestic product and aggregate non-performing loans. The term α_i is included to control for any unobserved BHC fixed effects. Finally, standard errors are clustered at the BHC level. Panel A of Table 2 provides the descriptive statistics for the sample. Over the sample, 0.82% of observations issued DGP guaranteed debt for a total of 0.01% of total assets or 0.02% of total debt.

2.3 Results

Table 3 presents the results from Equation 1. The first column contains the results when the dependent variable is $DGP\ Dummy_{i,t}$. We find a negative relationship between equity capital and the DGP Dummy. This supports the notion that BHCs with larger and safer forms of financing did not need additional debt financing, even if insured by the FDIC. We also find that efficiency is negatively related to issuing debt under the DGP. BHCs that had a lot of expenses relative to income were less likely to take on the additional expense of DGP debt.

⁴ The FDIC provides bank-reported data on debt issuance under the DGP found at: <https://www.fdic.gov/regulations/resources/tlgp/archive.html>.

Table 2: Summary Statistics

Panel A: Full Sample

Variable	Mean	Standard Deviation	Minimum	Maximum
DGP DUMMY	0.0082	0.0901	0.0000	1.0000
DGP TO ASSETS	0.0001	0.0043	0.0000	0.4834
DGP TO DEBT	0.0002	0.0070	0.0000	0.6333
EQUITYCAPITAL	0.0988	0.0337	-0.1249	0.6030
CHARGEOFF	0.3537	0.7606	-5.8828	41.1795
EFFICIENCY	0.6333	19.7731	-2281.6670	169.0000
NETINCOME	-0.0010	0.0088	-0.3968	0.0786
LIQUIDITY	0.2445	0.1326	0.0008	1.2739
FUNDINGGAP	0.1436	0.1506	-0.8000	1.0002
NETLOANGROWTH	0.0047	0.1032	-0.8788	5.5533
SIZE	12.4643	1.4554	8.8490	21.3476
STDEV	0.3355	7.4710	0.0001	412.0329
TARP	0.1071	0.3093	0.0000	1.0000
RGDPG	-0.4021	1.1433	-2.1638	1.0984
NPLG	0.2119	0.0563	0.1507	0.2969
N	13566	13566	13566	13566

Panel B: CEO Sample

Variable	Mean	Standard Deviation	Minimum	Maximum
DGP DUMMY	0.1301	0.3368	0.0000	1.0000
DGP TO ASSETS	0.0011	0.0043	0.0000	0.0387
DGP TO DEBT	0.0031	0.0238	0.0000	0.4550
EQUITYCOMPENSATION	0.4528	0.2670	0.0000	1.0000
CEOBRD	0.8988	0.3020	0.0000	1.0000
MBA	0.2530	0.4353	0.0000	1.0000
TENURE	8.3060	7.4113	0.0000	30.0000
CEOAGE	57.1566	6.4559	40.0000	82.0000
OVERCONFIDENCE	0.1349	0.3421	0.0000	1.0000
EQUITYCAPITAL	0.1070	0.0262	0.0385	0.2002
CHARGEOFF	0.4465	0.6109	-1.5317	5.7543
EFFICIENCY	0.5315	1.7501	-32.4544	9.8398
NETINCOME	-0.0009	0.0079	-0.0576	0.0603
LIQUIDITY	0.2350	0.1385	0.0299	1.0523
FUNDINGGAP	0.1799	0.1708	-0.2170	1.0002
NETLOANGROWTH	0.0032	0.1241	-0.4771	1.3052
SIZE	16.4698	1.6618	12.7398	21.3476
STDEV	9.2586	41.6525	0.0094	412.0329
TARP	0.5518	0.4979	0.0000	1.0000
RGDPG	-0.4162	1.1566	-2.1638	1.0984
NPLG	0.2108	0.0560	0.1507	0.2969
N	415	415	415	415

Note: This table displays the summary statistics for the samples.

The funding gap is negatively related to the DGP Dummy suggesting that the more short-term liabilities that the BHC had relative to assets, the less likely the BHC was to take on additional DGP debt. We also find that the loan growth and asset volatility are positively related to the DGP Dummy suggesting that BHCs with more loan requests and variability in assets were more likely to issue DGP guaranteed debt because they needed the funds to support growth. Finally, we find that the economy was related to the decision to issue DGP debt. The higher the GDP growth, the less likely the BHC was to issue DGP debt supporting the evidence that as the economy improved BHCs did not need the additional source of funds. Lastly, the more nationwide nonperforming loans the more likely the BHC was to borrow DGP guaranteed debt.

Table 3: Baseline Results

Variable	DGP DUMMY	DGP TO ASSETS	DGP TO DEBT
EQUITYCAPITAL	-0.192**	-0.0015	-0.0004
CHARGEOFF	0.0011	0.0000	0.0000
EFFICIENCY	-0.00001***	0.0000	0.0000
NETINCOME	0.1280	-0.0010	0.0002
LIQUIDITY	-0.0160	-0.0002	-0.0014
FUNDINGGAP	-0.0438***	-0.0004	0.0005
NETLOANGROWTH	0.0216**	0.0005	-0.0001
SIZE	0.0232	0.0004*	0.0004
STDEV	0.0021**	0.00002*	0.0001
TARP	0.0099	0.0002**	0.0015
RGDPG	-0.0050***	-0.0001***	-0.0001**
NPLG	0.0265**	0.0013	0.00240*
CONSTANT	-0.2610	-0.00513*	-0.0055
NUMBER OF OBSERVATIONS	13522	13522	13522
LOG LIKELIHOOD RATIO	17606.4	56049.1	49724.9
R ²	0.4630	0.2050	0.2290

Note: This table provides the results from the FE regression given by Equation (1) using data on BHCs from 2008Q4 through 2009Q4. All variables are defined in Appendix Table A.1. * is $p < 0.10$, ** is $p < 0.05$, and *** is $p < 0.01$.

Looking at columns two and three which contain the results for the percentage of DGP debt issued as a proportion of total assets and total debt, respectively. We find that BHCs that took TARP funds issued a higher proportion of DGP debt as a percentage of total assets. This might suggest that these BHCs were the most in need of additional funds. Across both columns, DGP debt issuance is negatively related to GDP growth. Again, suggesting that as the economy improved there was less need for guaranteed debt.

3. Do CEO Characteristics Influence the DGP?

A growing body of research points to the importance of understanding personal and professional characteristics of Chief Executive Officers (CEOs) and how they

influence firm decision-making, yet BHCs are commonly excluded.⁵ One of the few papers, Wilson and Wu (2018) reported that CEOs at firms that sought out FDIC debt guarantees earned higher compensation and document that systemically important banks were more likely to issue guaranteed debt. There are a growing number of studies examining how CEO characteristics- namely compensation, board participation, education, tenure, age, and overconfidence- affect corporate decision-making.^{6,7} The prevailing literature would suggest that CEOs whose personal and professional characteristics align with more risk-taking to be more likely to issue debt under the DGP as debt financing is seen as risk increasing. Alternatively, the decision to issue debt might be more likely by CEOs with more conservative decision-making characteristics as issuing guaranteed debt during the crisis gave the company more liquidity, thus reducing firm risk. Lastly, these characteristics may not influence corporate decisions in the stimulus setting as we've seen in other literature.

We obtain data on CEOs for publicly traded BHCs from Compustat's Execucomp and Boardex databases. RSSD IDs are used to match the Permco identifier from the Center for Research in Security Prices (CRSP) to the BHC data used earlier. However, because only a small fraction of BHCs are publicly traded, this reduces the sample to cover roughly 85 BHCs. Panel B of Figure 1 provides the data on DGP issuances for this smaller sample with CEO characteristics. Over the sample, we capture fifty-four debt issuances, or about half the debt issuances in the previous sample. Again, we note that most of the debt issuances tended to be at the start of the program and issuances dwindled as the program neared expiration.

3.1 Model and Results

To examine the relationship between CEO characteristics and debt issuance under the DGP, we modify Equation (1) with a vector of six CEO characteristics: EQUITYCOMPENSATION, TENURE, MBA, CEOBRD, CEOAGE, and OVERCONFIDENCE. All variables are defined in Appendix Table A.1. Panel B of Table 2 provides the descriptive statistics for the sample. We find that 13% of this sample issued DGP debt averaging 0.11% of total assets or 0.31% of total debt.

Table 4 presents the results for the CEO characteristics. Column 1 presents the results when the dependent variable is $DGP Dummy_{i,t}$. None of the CEO characteristics are statistically significant. Within the BHC financial controls, we continue to find that BHCs with larger ratios of equity and that were more inefficient were less likely to issue DGP guaranteed debt. Finally, as the growth rate in GDP improved, BHCs issued less guaranteed debt.

In column 2, we find that BHCs with MBA CEOs issued less guaranteed debt as a percentage of assets. This finding adds to the prior literature on MBAs and leverage (Bertrand and Schoar 2003) and with MBA CEOs being less risk-prone (Collins and Moore 1970). The economic effect of a BHC CEO having an MBA is that the BHC issues 0.71% less debt as a percentage of assets under the DGP. Again, we find that

⁵ E.g. Malmendier 2018; Bertrand and Schoar 2003; Malmendier and Tate 2005, 2008; Six et al. 2013; Faulkner and Garcia-Feijoo 2022; Nguyen et al. 2018

⁶ Corporate decisions are more affected by CEOs than other top executives (Bertrand and Schoar 2003).

⁷ Due to the lack of variation in gender of BHC CEOs, we cannot examine.

BHCs with larger amounts of equity were less likely to issue FDIC guaranteed debt and as the GDP improved BHCs were less likely to issue DGP guaranteed debt. In column 3, we do not find that any CEO characteristics are related to the percentage of DGP debt to total debt. In fact, the only significant relationship is GDP growth rate which continues to suggest that as the economy improves, BHCs issued less DGP debt.

Table 4: Baseline Results for CEO Characteristics

Variable	DGP DUMMY	DGP TO ASSETS	DGP TO DEBT
EQUITYCOMPENSATION	-0.0833	0.0002	0.0038
CEOBRD	0.0932	0.0029	0.0003
MBA	0.0815	-0.0071**	-0.0064
TENURE	-0.0588	0.0014	0.0001
CEOAGE	0.2760	0.0055	0.0077
OVERCONFIDENCE	0.0824	0.0012	0.0018
EQUITYCAPITAL	-3.5620**	-0.0448**	-0.0012
CHARGEOFF	0.0415	0.0002	0.0017
EFFICIENCY	-0.0502**	-0.0007	-0.0030
NETINCOME	2.6670	0.0502	0.1710*
LIQUIDITY	0.2050	0.0086	-0.0089
FUNDINGGAP	-0.4010	-0.0063	0.0292
NETLOANGROWTH	0.1310	0.0027	-0.0119
SIZE	0.358*	0.0023	-0.0030
STDEV	0.0010	0.0000	0.0000
TARP	0.0796	0.0019	0.0155
RGDPG	-0.0675***	-0.0010***	-0.0017***
NPLG	0.2320	-0.0023	0.0210
CONSTANT	-6.5630*	-0.0596	0.0052
NUMBER OF OBSERVATIONS	405	405	405
LOG LIKELIHOOD RATIO	55.1	1722.1	1007.5
R ²	0.6140	0.3800	0.3040

Note: This table provides the results from the FE regression given by modified Equation (1) using data on BHCs with available CEO data from 2008Q4 through 2009Q4. All variables are defined in Appendix Table A.1. T-statistics are reported in parentheses where * is $p < 0.10$, ** is $p < 0.05$, and *** is $p < 0.01$.

4. Conclusion

We examine the influence of BHC characteristics on debt issuance in the DGP. We find that BHCs with more equity, that were less efficient, and had a larger funding gap were less likely to issue DGP debt. But BHCs with a higher loan growth and higher volatility of assets were more likely to issue DGP debt. Finally, the economy affected the decision, and we document that as the economy improved BHCs were less likely to issue DGP debt and issued a smaller proportion of DGP debt in terms of total assets and total debt.

Moreover, we add to the literature by examining the personal and professional characteristics of BHC CEOs and the decision to issue debt under the DGP. While we find little effect of CEO characteristics on the decision to issue DGP debt, we find that

BHCs with a CEO with a Master of Business Administration (MBA) issued a lower amount of debt as a percentage of total assets.

Understanding the decisions to participate in government programs based on BHC and CEO characteristics is novel and this study adds new findings on the influence of CEO personal and professional characteristics. Lastly, this research can provide insight to policymakers who will look to programs from the Great Recession when formulating future policy.

References

- Amborse, B. W., Y. Cheng, and T. D. King (2013). 'The financial crisis and temporary liquidity guarantee program: their impact on fixed-income markets', *The Journal of Fixed Income*, 23, pp. 5-26.
- Bertrand, M., A. Schoar (2003). 'Managing with style: The effect of managers on firm policies', *Quarterly Journal of Economics*, 118, pp. 1169-1208.
- Black, J. R., Hoelscher, S. A., and D. Stock (2014) 'Benefits of government bank debt guarantees: evidence from the debt guarantee program' Working Paper. University of Memphis.
- Black, J. R., Stock, D., and P. Yadav (2016). 'The pricing of different dimensions of liquidity: Evidence from government guaranteed bonds', *Journal of Banking and Finance*, 71, pp. 119-32.
- Collins, O., and Moore, D. (1970). 'The organization makers: A behavioral study of independent entrepreneurs.' Appleton-Century-Crofts.
- Faulkner, M. and L. García-Feijóo (2022) 'Hot-Stove Effects: The Impact of CEO Past Corporate Experiences on Dividend Policy', *Journal of Financial and Quantitative Analysis*, 57, pp. 1695-1726.
- Malmendier, U. (2018). 'Behavioral corporate finance', *In Handbook of Behavioral Economics: Applications and Foundations*, Volume 1, pp 277-379.
- Malmendier, U., and G. Tate (2005). 'CEO overconfidence and corporate investment', *The Journal of Finance*, 60, pp. 2661-2700.
- Malmendier, U., and G. Tate (2008). 'Who makes acquisitions? CEO overconfidence and the market's reaction', *Journal of Financial Economics*, 89, pp. 20-43.
- Nguyen, T., Nguyen, L. T., Ngo, A. D., and H. Adhikari (2018). 'CEO optimism and the credibility of open-market stock repurchase announcements', *Journal of Behavioral Finance*, 19, pp. 49-61.
- Six, B., Normann, M., Stock, R. M., and D. Schiereck (2013). 'Strategic leaders' impact on corporate policies and firm performance: Insights from CEOs and CFOs of large listed firms in Germany'. *Schmalenbach Business Review*, 65(2), pp. 82-111.
- Wilson, L. and Y. Wu (2018). 'Overpaid CEOs got FDIC debt guarantee', *The North American Journal of Economics and Finance*, 45, pp. 101-15.

Appendix Table A.1: Variable Descriptions

Variables	Definition
DGP DUMMY	Indicator variable equal to one if the BHC issued debt under the DGP, and zero otherwise
DGP TO ASSETS	The ratio of DGP guaranteed debt issued in a quarter over the total assets of the previous quarter
DGP TO DEBT	The ratio of DGP guaranteed debt issued in a quarter over the total debt of the previous quarter
EQUITYCAPITAL	Total equity capital divided by the previous quarter's total assets
CHARGEOFF	Total amount of charged-off loans and lease financing receivables to the previous quarter's total loans
EFFICIENCY	Noninterest expense less amortization of intangible assets as a percentage of net interest income plus noninterest income. A lower value indicates greater efficiency.
ROA	Net income divided by the previous quarter's total assets
LIQUIDITY	The sum of average noninterest-bearing balances due from depository institutions, average currency and coin, and average federal funds sold and securities purchased under agreements to resell and available for sale securities divided by the previous quarter's total assets
FUNDINGGAP	Short term liabilities minus short term assets divided by the previous quarter's total assets
NETLOANGROWTH	One-quarter growth rate in net loans and leases
SIZE	Natural log of total assets in 2009 dollars
STDEV	Standard deviation of total assets across the previous year
TARP	Indicator variable equal to one if a bank within the BHC received TARP funds
RGDPG	One-quarter change in Real Gross Domestic Product
NPLG	One-quarter change in aggregate non-performing loans
EQUITYCOMPENSATION	The fraction of the manager's total compensation paid in stock and options grants
CEOBRD	Indicator variable equal to one if CEO sits on the board, and zero otherwise
MBA	Indicator variable equal to one if CEO has an MBA degree, and zero otherwise
LOGTENURE	Natural log of one plus the number of years as CEO
LOGCEOAGE	Natural log of one plus the current age of the CEO
OVERCONFIDENCE	Indicator variable equal to one if a CEO is holding (un-exercising) an option that is 67% or more in the money at two separate occurrences in the career. This variable will take the value of one from the year of the second occurrence onward, and zero otherwise