Internet Appendix to

Why CEO option compensation can be a bad option for shareholders: Evidence from major customer relationships

A.1. Examples of the Mechanisms Connecting Customers and Suppliers

In this appendix, we provide several anecdotal examples of the mechanisms discussed in the main body of the paper relating the importance of the customer-supplier relationship on the value and operations of the supplier, the importance of supplier risk to major customers, and supplier firms considering customers when setting compensation policies.

A.1.1. The Importance of Major Customer Relationships for Suppliers

Most firms with a major customer will include a discussion on the importance of the customer to the operations of the firm in their annual 10-K filing, along with other filings. We highlight several representative examples below:

A.1.1.1. Scientific Atlanta Inc., Cable Equipment Manufacturer, 2005 10-K

"A failure to maintain our relationships with customers that make significant purchases of our products and services could harm our business and results of operations. A decline in revenue from one of our key customers or the loss of a key customer could have a material adverse effect on our business and results of operations."

A.1.1.2. Analogic Corp., Imaging Systems Provider, 2001 10-K

"The Company's three largest customers in fiscal 2001, each of which is a significant and valued customer, were Philips, General Electric and Toshiba, which accounted for approximately 22.6%, 10.5%, and 7.2%, respectively, of product and engineering revenue for the fiscal year ended July 31, 2001. Loss of any one of these customers would have a material adverse effect upon the Company's business."

A.1.1.3. Qlogic Corp., Networking Server and Storage Manufacturer, 2005 10-K

"We believe that our major customers continually evaluate whether or not to purchase products from alternative or additional sources. Additionally, customers' economic and market conditions frequently change. Accordingly, there can also be no assurance that a major customer will not reduce, delay or eliminate its purchases from us. Any such reduction, delay or loss of purchases could have a material adverse effect on our business, financial condition or results of operations."

A.1.1.4. Synchronoss Technologies Inc., Cloud-based Storage Provider, 2017 10-K

"Our top five customers accounted for 72% for the year ended December 31, 2017 compared to 74% for the year ended December 31, 2016. Of these customers, Verizon accounted for more than 10% of our revenues in 2017. There are inherent risks whenever a large percentage of total revenues are concentrated with a limited number of customers. It is not possible for us to predict the future level of demand for our services that will be generated by these customers or the future demand for the products and services of these customers in the end-user marketplace. In addition, revenues from these larger customers may fluctuate from time to time based on the commencement and completion of projects, the timing of which may be affected by market conditions or other factors, some of which may be outside of our control. Further, some of our contracts with these larger customers permit them to terminate our services at any time (subject to notice and certain other provisions). If any of our major customers experience declining or delayed sales due to market, economic or competitive conditions, we could be pressured to reduce the prices we charge for our services or we could lose the customer. Any such development could have an adverse effect on our margins and financial position and would negatively affect our revenues and results of operations and/or trading price of our common stock."

A.1.1.5. Stoneridge Inc., Electrical Component Manufacturer, 2016 10-K

"We have several customers which account for a significant percentage of our sales. The loss of any significant portion of our sales to these customers, or the loss of a significant customer, would have a material adverse impact on our financial condition and results of operations. We supply numerous different products to each of our principal customers. Contracts with several of our customers provide for supplying their requirements for a particular model, rather than for manufacturing a specific quantity of products. Such contracts range from one year to the life of the model, which is generally three to seven years. These contracts are subject to potential renegotiation from time to time, which may affect product pricing and generally may be terminated by our customers at any time. Therefore, the loss of a contract for a major model or a significant decrease in demand for certain key models or group of related models sold by any of our major customers would have a material adverse impact on the Company. We may also enter into contracts to supply products, the introduction of which may then be delayed or cancelled. We also compete to supply products for successor models, and are therefore subject to the risk that the customer will not select the Company to produce products on any such model, which could have a material adverse impact on our financial condition and results of operations.

Due to the competitive nature of the markets we serve, we face pricing pressures from our customers in the ordinary course of business. In response to these pricing pressures we have been able to effectively manage our production costs by the combination of lowering certain costs and limiting the increase of others, the net impact of which has not been material. However, if we are unable to effectively manage production costs in the future to mitigate future pricing pressures, our results of operations would be adversely affected."

A.1.2. The Importance of Supplier Risk to Major Customers

Major customers of suppliers often include a discussion on the importance of supply continuity and make statements regarding monitoring the risk of their suppliers within their annual 10-K filings. In some circumstances, as a part of supply agreements, major customers will require suppliers to meet certain conditions to maintain supply continuity. We highlight several representative examples of firms that are listed as major customers to suppliers in our sample:

A.1.2.1. Dell Technologies, IT Infrastructure Services, 2017 10-K

"We regularly monitor economic conditions and associated impacts on the financial markets and our business. We consistently evaluate the financial health of our supplier base, carefully manage customer credit, diversify counterparty risk, and monitor the concentration risk of our cash and cash equivalents balances globally. We routinely monitor our financial exposure to borrowers and counterparties.

We monitor credit risk associated with our financial counterparties using various market credit risk indicators such as credit ratings issued by nationally recognized rating agencies and changes in market credit default swap levels. We perform periodic evaluations of our positions with these counterparties and may limit exposure to any one counterparty in accordance with our policies. We monitor and manage these activities depending on current and expected market developments."

A.1.2.2. Verizon Communications Inc., Telecommunications Provider, 2017 10-K

"We depend on various key suppliers and vendors to provide us, directly or through other suppliers, with equipment and services, such as switch and network equipment, smartphones and other wireless devices, that we need in order to operate our business and provide products to our customers. For example, our smartphone and other device suppliers often rely on one vendor for the manufacture and supply of critical components, such as chipsets, used in their devices. If these suppliers or vendors fail to provide equipment or service on a timely basis or fail to meet our performance expectations, we may be unable to provide products and services as and when requested by our customers. We also may be unable to continue to maintain or upgrade our networks. Because of the cost and time lag that can be associated with transitioning from one supplier to another, our business could be substantially disrupted if we were required to, or chose to, replace the products or services of one or more major suppliers with products or services from another source, especially if the replacement became necessary on short notice. Any such disruption could increase our costs, decrease our operating efficiencies and have a material adverse effect on our business, results of operations and financial condition."

A.1.2.3. General Motors Company, Automotive Manufacturer, 2010 10-K

"We rely on many suppliers to provide us with the systems, components and parts that we need to manufacture our automotive products and operate our business. In recent years, a number of these suppliers have experienced severe financial difficulties and solvency problems, and some have sought relief under the Bankruptcy Code or similar reorganization laws. This trend intensified in 2009 due to the combination of general economic weakness, sharply declining vehicle sales and tightened credit availability that has affected the automotive industry generally. Suppliers may encounter difficulties in obtaining credit or may receive an opinion from their independent public accountants regarding their financial statements that includes a statement expressing substantial doubt about their ability to continue as a going concern, which could trigger defaults under their financings or other agreements or impede their ability to raise new funds.

When comparable situations have occurred in the past, suppliers have attempted to increase their prices, pass through increased costs, alter payment terms or seek other relief. In instances where suppliers have not been able to generate sufficient additional revenues or obtain the additional financing they need to continue their operations, either through private sources or government funding, which may not be available, some have been forced to reduce their output, shut down their operations or file for bankruptcy protection. Such actions would likely increase our costs, create challenges to meeting our quality objectives and in some cases make it difficult for us to continue production of certain vehicles. To the extent we take steps in such cases to help key suppliers remain in business, our liquidity would be adversely affected. It may also be difficult to find a replacement for certain suppliers without significant delay."

A.1.2.4. Modine Manufacturing Co., Thermal Management Manufacturer, 2017 10-K

"[W]e purchase parts from suppliers that use our tooling to create the parts. In most instances, and for financial reasons, we do not have duplicate tooling for the manufacture of the purchased parts. As a result, we are exposed to the risk of a supplier being unable to provide the quantity or quality of parts that we require. Even in situations where suppliers are manufacturing parts without the use of our tooling, we face the challenge of obtaining consistently high-quality parts from suppliers that are financially stable. We utilize a supplier risk management program that leverages internal and third-party tools to identify and mitigate higher-risk supplier situations."

A.1.2.5. Synchronoss Technologies Inc., Cloud-based Storage Provider, 2017 10-K

As part of its service provider agreement with Verizon Communications:

32. INSURANCE

32.1 Supplier shall secure and maintain at its expense during the term of this Agreement:

32.1.1 Commercial General Liability insurance (including, but not limited to, premises-operations, products/completed operations, contractual liability, independent contractors, personal and advertising injury) with limits of at least $****, combined single limit for each occurrence and $**** general aggregate.

32.1.2 Commercial Automobile Liability insurance with limits of at least $**** combined single limit for each accident covering all owned, non-owned hired and leased vehicles.

32.1.3 Workers' Compensation insurance, in compliance with the statutory requirements of the state(s) of operation and Employer's Liability insurance with limits of not less than $**** each accident/disease/policy limit.

32.1.4 A combination of primary and excess/umbrella liability policies will be acceptable as a means to meet the limits specifically required hereunder. THE REQUIRED MINIMUM LIMITS OF COVERAGE SHOWN ABOVE, HOWEVER, WILL NOT IN ANY WAY RESTRICT OR DIMINISH SUPPLIER'S LIABILITY UNDER THIS AGREEMENT.

32.1.5 Professional Liability/Errors and Omissions insurance, with limits of not less than $**** each claim.

32.2 Supplier represents and warrants that it will obtain upon or prior to the effective date of the agreement a policy or policies of insurance from an insurer(s) that (i) is licensed, authorized or permitted to do business in the state(s) where service is to be provided, and (ii) has a Best's Rating "A- VII" or better. Supplier shall deliver a Certificate of Insurance on which Verizon Communications Inc., its subsidiaries and Affiliates are named as additional insureds and listed as a Certificate Holder to the following address:

****
Verizon Sourcing LLC
One Verizon Way
Mailcode ****
Basking Ridge, NJ USA 07920

or via Verizon's vSource supplier portal. Supplier's insurer or its authorized representative shall provide no less than **** prior written notice of intent to non-renew, cancellation or material adverse change, except **** notice for nonpayment of premium shall apply.

32.3 Supplier shall waive its rights of subrogation against Verizon for all claims, as permitted by law.

32.4 Supplier agrees that Supplier's policy is primary and non-contributory with any insurance or program of self-insurance that may be maintained by Verizon.

32.5 Supplier is responsible for determining whether the above minimum insurance coverages are adequate to protect its interests. The above minimum coverages do not constitute limitations upon Supplier's liability.

32.6 Self-Insure. Should Supplier elect to self-insure any portion of the insurance required to be maintained, Supplier shall maintain a senior unsecured credit rating from Standard & Poor's, Moody's of at least BBB- or Baa2 or commensurate rating respectively. If Supplier's senior unsecured credit rating falls below either of these thresholds during the term of this Agreement, Supplier will procure insurance for the risks it is self-insuring as soon as possible but no later than **** from the date of such event. If Supplier does not have a senior unsecured credit rating described above, a minimum net worth of $**** will be required to self-insure and shall be maintained throughout the term of this Agreement. If Supplier's net worth falls below $****during the term of this Agreement Supplier will procure and maintain insurance for the risk it is self-insuring as soon as possible.

A.1.3. Suppliers Incorporating Customer Considerations into Executive Compensation

Major suppliers often explicitly mention considering customer relationships when setting compensation policies in the Compensation Committee Report in the proxy statement. We highlight several representative examples below:

A.1.3.1. ARC Group Worldwide Inc., Metal Molding and Printing, 2017 Proxy Statement

"The Company's executive compensation program is designed to integrate compensation with the achievement of our short-term and long-term business objectives and to assist us in attracting, motivating and retaining the highest quality executive officers and rewarding them for superior performance.

We believe that the compensation of our executive officers should reflect their success in attaining key operating objectives, such as growth, maintenance of market position, development of new products, maintenance and development of customer relationships and long-term competitive advantage. We also believe that executive compensation should reflect achievement of individual goals established for specific executive officers, as well as specific achievements by such individuals over the course of the year such as development of specific products or customer relationships or agreements or executing or integrating acquisitions and strategic arrangements."

A.1.3.2. LSI Logic Corp., Semiconductor Design and Manufacturing, 2017 Proxy Statement

"Our compensation program is intended to provide each of our executive officers with a comprehensive compensation package based on performance that will motivate each of them to drive the achievement of our corporate objectives. In 2006, our principal corporate objectives were (i) to exceed our financial goals and strengthen our financial foundation and ability to increase stockholder value, and (ii) to expand and strengthen our product portfolio and customer relationships in our targeted storage and consumer electronics markets."

A.1.3.3. Huntington Ingalls Industries, Shipbuilding Company, 2017 Proxy Statement

"A significant portion of the potential compensation of our executives is at risk, and that risk increases with each executive's level of responsibility. We have designed our compensation program to balance performance-based compensation over the short- and long-term to incentivize decisions and actions that promote stockholder value and focus our executives on performance that benefits our stockholders and customers, while discouraging inappropriate risk-taking behaviors."

A.1.3.4. RealNetworks Inc., Internet Streaming Software Provider, 2010 Proxy Statement

"In establishing executive compensation, the Compensation Committee is generally guided by the following philosophy and objectives:

Attract, motivate and retain the best executives. The total compensation for executive officers should be competitive with the compensation paid by similarly situated companies in the digital media, technology and other relevant industries and the compensation packages offered by other private and public companies with which we believe we compete for talent, and should enhance retention by having long-term incentives that are subject to multi-year vesting.

Reward individual performance against the achievement of measurable performance targets. The compensation packages provided to our executive officers should include compensation that rewards performance as measured against established annual and strategic goals. These goals may cover both the unit for which the executive is responsible and the company as a whole.

Provide pay incentives that align executive compensation with the long-term interests of all of our stakeholders — shareholders, customers and employees. Executive compensation should be designed to motivate executives to build a growing, profitable and sustainable business. This can best be achieved by encouraging our executive officers to conceive, develop and market the best products and services in our chosen markets and to exceed customer expectations.

Executive compensation elements do not encourage excessive risk taking. Elements of the overall compensation packages provided to our executive officers should provide a balance between fixed and variable elements that are established at sufficient levels to discourage excessive risk taking."

A.1.3.5. II-VI Inc., Optical Products Manufacturer, 2004 Proxy Statement

"In setting compensation for the Chief Executive Officer and Chief Operating Officer, the Compensation Committee considers objective criteria including performance of the business, accomplishments of long-term strategic goals and the development of management. The Compensation Committee considers the Company's revenue growth and earnings to be the most important factors in determining the Chief Executive Officer's and Chief Operating Officer's compensation package. Along with the financial performance factors, the Compensation

Committee also considers achievement of long-term strategic goals, including enhancing the Company's reputation among both its customer and investor bases during the year, and the market base salary of comparable positions."

A.1.3.6. EarthShell Corp., Food Packaging Manufacturer, 2005 Proxy Statement

"The Compensation Committee meets annually to evaluate the Chief Executive Officer's performance and to review the Chief Executive Officer's compensation. A founder of the Company and co-innovator of the EarthShell technology, Mr. Simon K. Hodson has been a driving force in making the Company - as a corporation and as a new packaging concept - a reality. His concern for the environment, coupled with his visionary leadership and commitment, has helped the Company achieve its current state of development.

In reviewing Mr. Simon Hodson's compensation, the Compensation Committee considers his principal responsibilities, which include providing overall vision and strategic direction for EarthShell, attracting and retaining highly qualified employees and developing and maintaining key customer and capital relationships."

A.2. CEO Option Exercise Decisions and Tariff Cuts

Our analysis focuses on the value of vega for the option award in the relevant year (*Flow Vega*) and did not consider the potential change to CEO vega resulting from option exercise. This could be problematic if the CEO option exercise decision of firms with large customers is significantly affected by tariff cuts. We address this issue by studying CEO option exercises.

We obtain CEO option exercise information from Thomson Reuters Insider Filing Database. We merge ExecuComp data with the information on CEO option exercises from Thomson Reuters Insider Filing Database, which limits our sample period to years 1996-2015. Expiring CEO stock options account for a small proportion of the sample, only 10% of firm-years in our sample had CEO options expiring in the same year, consistent with the findings of Klein and Maug (2020). Given that expiring options tend to have vegas close to zero, we primarily focus on early CEO option exercises when considering stock options removed from a CEO's portfolio. In addition, we also find a relatively small proportion of option exercises relative to total outstanding options (roughly 14% of outstanding options), which is also consistent with Klein and Maug (2020). This is likely to limit the economic impact of option exercises on a CEO's overall vega and any bias to our baseline analysis. Nevertheless, we explicitly examine CEO option exercises surrounding tariff reductions and report this result in Table A1.

To ensure that our baseline analysis is not in response to a change in CEO vega due to option exercises, we consider whether CEO option exercise decisions can be affected by tariff reduction events. To test this conjecture, we use the same model specification as in Table 3 of our submission where the dependent variables are measures of CEO option exercises, namely *CEO Option Exercise* $_t$ and *Vega from Option Exercises* $_t$. These results are reported in Table A1 below. The results in columns 1 and 3 show that CEOs are marginally more likely to exercise stock options during tariff cut years and the *Flow Vega* of these options are marginally higher. Importantly, we do not observe a differential effect between firms with and without large customers. This is highlighted in columns 2 and 4, which show that the effect of tariff cuts on CEO option exercises is similar among firms with and without large customers. In other words, CEO option exercises due to tariff cuts lead to similar decreases in CEO risk-taking incentives in these two groups of firms, which is not particularly surprising. Thus, accounting for CEO option exercises is unlikely to be the cause of the main result in Table 3 in the main paper, where we find firms with large customers experience significantly larger decreases in CEO risk-taking incentives from new option grants following the tariff reductions.

A.3. CEO Option Exercise Decisions and Tariff Cuts

Given the large effect that the change in accounting treatement of options from FAS 123R appears to have had on the propensity to reward options, we replicate our baseline results of Table 3 and split the sample around FAS 123R (fiscal year 2005). This result is reported below and in Panel A of Table A2. The main variable of interest (the interaction between *Tariff Cut* and *Large Customer*) remains statistically significant in both the pre- and post-FAS 123R periods shown in columns 1 and 2 where *Flow Vega* is the dependent variable. However, we only observe a significant relation between *Pct Option* compensation for the pre-FAS 123R period. Given the decreased importance of option compensation post-FAS 123R, it is unsurprising that subsequently firms no longer significantly reduce the proportion of option compensation in response to tariff cuts. However, we still observe significant reductions in the risk-taking incentives measured by *Flow Vega* in these grants following FAS 123R.

Given that executive stock option compensation may start to decrease before FAS 123R due to the exchange listing rule changes following SOX, we performed another split of the sample centered on fiscal year 2003 and report this result in Panel B of Table A2. Parallel to the results reported in Panel A of Table A2, we find that our main risk-taking incentives measure (*Flow Vega*) remains statistically significant both in the pre- and post-SOX periods.

References:

Klein, D., & Maug, E. (2020). How do executives exercise their stock options? *The Review of Corporate Finance Studies*.

Table A1. The Impact of Tariff Reductions on CEO Option Exercising Behavior

The table below replicates our main results using risk-taking incentive measures of CEO option exercises. The information on CEO option exercises is from Thomson Reuters Insider Filing Database, which limits our sample period to after 1995. *CEO Option Exercise* $_t$ is an indicator variable that equals to 1 if a firm's CEO has exercised stock options during the year and 0 otherwise. *Vega from Option Exercises* $_t$ is the dollar change in the stock options exercised by the CEO during the year associated with a 0.01 increase in the firm's return volatility stated in 2015 dollars. Control variables (not reported for brevity) are the same as in Table 3, Panel A of the main paper. *t*-statistics are in parenthesis and ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels respectively.

Dep Var:	**CEO Option Exercise $_t$**		**Ln(1+ Vega from Option Exercises $_t$)**	
	(1)	(2)	(3)	(4)
Tariff Cut $_t$: a	0.041*	0.036	0.267*	0.290
	(1.86)	(1.17)	(1.67)	(1.26)
Large Customer $_{t-1}$: b	-0.016	-0.018	-0.083	-0.078
	(-0.81)	(-0.84)	(-0.63)	(-0.56)
*a * b*		0.010		-0.042
		(0.25)		(-0.15)
Other Table 3 Control Variables	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	7,669	7,669	7,669	7,669
Adjusted R^2	0.312	0.311	0.255	0.255

Table A2. CEO Stock Option Compensation Surrounding FAS 123R and SOX

This table replicates our results from the main paper by splitting our main sample into subsamples based on the FAS 123R and post-SOX listing rule events, and reports the result from a validation test of industry-level tariff cuts. Panels A and B below replicates results in columns 1 and 2 of Panel A of Table 3, Panel A from the main paper around FAS 123R and SOX respectively. *Flow Vega* is the dollar change in the CEO's option portfolio from the current year's grants associated with a 0.01 increase in the firm's return volatility stated in 2015 dollars. Control variables (not reported for brevity) are the same as in Table 3, Panel A. *t*-statistics are in parenthesis and ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels respectively.

Panel A: CEO Stock Option Compensation Surrounding FAS 123R

Dep Var:	**Ln(1+ Flow Vega $_t$)**		**Ln(1+ Pct Option$_t$)**	
	Pre FAS 123R	*Post FAS 123R*	*Pre FAS 123R*	*Post FAS 123R*
	(1)	(2)	(3)	(4)
Tariff Cut $_t$: a	0.529**	0.355*	0.152*	-0.029
	(2.43)	(1.69)	(1.88)	(-0.30)
Large Customer $_{t-1}$: b	0.149	0.064	0.042	0.054
	(0.77)	(0.44)	(0.56)	(0.72)
*a * b*	-0.812***	-0.470*	-0.304***	0.009
	(-2.81)	(-1.78)	(-2.74)	(0.08)
Other Table 3 Control Variables	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	5,424	3,385	5,424	3,385
Adjusted R^2	0.355	0.531	0.340	0.384

Panel B: CEO Stock Option Compensation Surrounding SOX

Dep Var:	**Ln(1+ Flow Vega $_t$)**		**Ln(1+ Pct Option$_t$)**	
	Pre SOX	*Post SOX*	*Pre SOX*	*Post SOX*
	(1)	(2)	(3)	(4)
Tariff Cut $_t$: a	0.600***	0.426	0.174**	-0.072
	(2.76)	(1.25)	(2.10)	(-0.53)
Large Customer $_{t-1}$: b	0.100	0.132	0.024	0.068
	(0.51)	(0.78)	(0.31)	(0.93)
*a * b*	-0.841***	-0.741*	-0.312***	-0.021
	(-2.88)	(-1.79)	(-2.76)	(-0.13)
Other Table 3 Control Variables	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	5,424	3,385	5,424	3,385
Adjusted R^2	0.355	0.531	0.340	0.384