Globalization and CEO Pay

1. Objective and motivation

Much attention has been given to increasing income shares of top income earners in many advanced economies. Atkinson and Søgaard (2016) report top 1 percent income shares over time for a number of countries including Denmark and show that all countries have exhibited increasing top income shares since the 1980s. A large part of these top income earners have been found to consist of the CEOs of the top firms, or 'supermanagers'.

Rising CEO pay may reflect the growing importance of general managerial skills (Murphy and Zabojnik, 2004) and the market for talent. This view is supported by a series of recent papers by Nicholas Bloom and various coauthors (e.g. Bender et al., 2016, Bloom and Van Reenen, 2007, and Bloom et al. 2013) showing that variation across firms in the use of sophisticated management techniques explains a considerable portion of variation in productivity, sales and profitability. Other authors have emphasized the possibility that CEO pay reflects growing influence over corporate boards, the ability to set their own compensation, and capture rents within the firm.[1] In short, it remains an open question whether rising CEO pay reflects good management, or good luck.

In this project we use the growing but differential exposure of Danish firms to global markets to shed light on why CEO pay has changed. Global exposure provides an ideal testbed for three reasons. One, the rise in CEO pay has occurred at the same time as a vast increase in globalization in Denmark and in other countries experiencing rapid CEO pay growth. Two, many of the channels hypothesized by the literature as affecting CEO pay are magnified in a global context. Three, Danish data enable us to carefully measure these channels, and to explore endogenous versus exogenous shocks, in a way that is not possible in other contexts.

More specifically, global markets potentially change the scale of firm activities (because a successful firm is not limited by the scale of the domestic market) and the complexity of firm activities (the available number and source-variety of inputs; the number and destination-variety of outputs). Both of these effects magnify the importance of high quality general management. Further, the differential volatility of domestic v. foreign sales changes the risk-reward tradeoffs faced by CEOs, especially those whose compensation depends on generating greater sales or profitability for their firms.

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[1] See Edmans and Gabaix (2016) for a survey of the theoretical literature and Bertrand (2009) and Frydmand and Jenter (2010) for reviews of empirical findings.

Finally, changes in a firm's sales may endogenously reflect the ability or choices of the CEO, but they may also exogenously reflect changes in market demand across products or destinations. Use of exogenous shocks to foreign demand, independent of a CEOs ability or choices, enable us to identify changes in sales arising from good luck rather than good management. If CEOs pay rises following this exogenous sales increase, then this is pure luck in the sense that the CEO did not do anything to deserve the salary increase.[2] By contrast, suppose the data show a positive correlation between rising sales and CEO pay when examined in a simple OLS framework, but no response in pay when sales rise following an exogenous increase in exports. In this case it is apparent that CEO compensation reflects good management, not good luck, and that markets are rewarding superior ability and decisions making that play an integral role in how the firm reaps the gains from globalization.

2. Data

We have access to a unique longitudinal matched worker-firm dataset for the entire population of Danish workers and firms since 1995. We observe firm level details on worker characteristics, imported and domestic inputs and their characteristics, and sales disaggregated by product classification, sales destination, and prices and quantity of export sales. The data is based on the so-called FIDA database in Statistics Denmark, which links workers and firms. As in Bennedsen et al. (2007) we define CEOs based on a register for persons in boards and management of private firms in Denmark, which is maintained by Erhvervs- og Selskabsstyrelsen. From the income registers in Statistics Denmark we obtain information about the contribution of e.g. bonus payments, stock options and fringe benefits to annual labor earnings of all employees including the CEO.

3. Methodology

We will begin by using fixed effect OLS to provide descriptive partial correlations that link CEO pay to firm characteristics including size (measured by sales and employment), and complexity (the number of inputs, occupational types, variety and composition of sales). Because our panel tracks individuals who become CEOs before, during, and after their time as CEO we can condition these correlations on the industry, the firm, or the CEO-firm job spell. This enables us to separate CEO pay that varies across firms (and likely reflects CEO to firm sorting emphasized in much of the literature) from changes in CEO compensation within a given firm over time. It also enables us to separate scale and complexity effects and answer whether CEOs are paid more for running larger firms, or also compensated for, conditional on size, running more complex operations. These

[2] Bertrand and Mullainathan (2001) document a positive correlation between oil prices and CEO pay in large U.S. oil companies, which may be taken as evidence that CEOs are rewarded for luck in this context.

insights are not found in previous CEO compensation studies that lack detailed input and output characteristics of the firm.

In a second exercise we estimate Mincer wage equations for changes in CEO pay, where the identifying variation comes from exogenous changes in exports or sales within the firm-CEO match over time. To identify exogenous shocks to exports or sales we rely on the instruments and identification strategy developed by Hummels et al. (2014). These instrumental variables measure demand shocks to Danish firms based on their initial product and destination country mix, interacted with changes in world import demands and transport costs. Hummels et al. (2014) found that the instruments generate good explanatory power for exports and sales that vary significantly across firms within the same industry.

In a third exercise, we examine a hypothesis from the literature that increased CEO pay reflects a compensating differential in a risk-reward tradeoff. The same exogenous shocks to foreign demand that generate variation in CEO compensation within job-spells may also lead to a heightened risk of layoffs. We estimate hazard models in which exogenous changes in sales affect the probability of CEO separations, and further assess the change in pay conditional on separation. This reflects the possibility that negative global shocks may displace some CEOs involuntarily and while positive global shocks lead to voluntary displacement as CEOs move to better and higher paying firms. Combining these estimates enables us to assess the risk-adjusted returns to leading a globally exposed firm.

4. Project participants

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5. Time plan and projected outcome

The scheduled duration of the project is two years starting July 2017. The target is to publish one paper in a highly ranked economics journal. A first draft of the paper will be ready June 2018. We intend to present the paper at international conferences and we will disseminate the results to a broader Danish audience.

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