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The Choice Between Various Freeze-out Procedures and its Consequences

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Abstract

We develop a model of freeze-out merger and tender offers and test it in an economy where merger and tender regulation are extremely different. Using a relatively large sample of 329 freeze-out offers in Israel during 2000-2019, we document evidence consistent with the model. We also find that tender offers: 1) are the preferred technique; 2) offer lower premiums; and 3) suffer from a relatively large (40%) offer rejection rate. These findings deviate from U.S. evidence, and are partly due to differences in the tender offer procedures. Thus, our study illustrates that the tender offer procedure is a delicate one, and explains why Delaware has often amended it.

Keywords: Going private transactions; controlling shareholders; mergers; tender offers

JEL Classifications: G32; G34; G38

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The Choice Between Various Freeze-out Procedures and its Consequences*

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February, 2021

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ABSTRACT

We develop a model of freeze-out merger and tender offers and test it in an economy where merger and tender regulation are extremely different. Using a relatively large sample of 329 freeze-out offers in Israel during 2000-2019, we document evidence consistent with the model. We also find that tender offers: 1) are the preferred technique; 2) offer lower premiums; and 3) suffer from a relatively large (40%) offer rejection rate. These findings deviate from U.S. evidence, and are partly due to differences in the tender offer procedures. Thus, our study illustrates that the tender offer procedure is a delicate one, and explains why Delaware has often amended it.

1 Introduction

Over the past two decades, delisting from the exchange has become a relatively popular choice for many public companies all over the world – see Figure 2 in Doidge, Karolyi and Stulz (2017). Several studies, such as Gao, Ritter and Zhu (2013), Kahle and Stulz (2017), and Doidge, Kahle, Karolyi and Stulz (2018) attribute this trend to a myriad of possible reasons including: 1) the increase in concentration of U.S. markets that made many small- and medium-size public firms less viable; 2) increasing regulatory requirements (SOX, for example); 3) the rise of the economy of scope, according to which small firms can become more profitable when merged into a large company that enables them to scale up more quickly and efficiently; and 4) the emergence of capital-raising alternatives for small- and medium-size private firms, for example, the surge in private equity funds. In sum, the net benefit of staying an exchange-listed firm has diminished, and various going private legal procedures have become popular.

Corporate law affords several possible venues by which a publicly listed company might go private. It can be acquired by or merged into a private company, or it can be taken private by its controlling shareholders (or other investors) buying all public shares and delisting the stock from the exchange. Merger and acquisitions are the most popular going private mechanisms in the U.S. – see Doidge et al. (2018), while freeze-outs (acquisition of all public shares by the controlling shareholders) are popular in markets with concentrated-ownership public firms – see Lauterbach and Mugerman (2020), for example.

We focus on freeze-out techniques. The two main freeze-out mechanisms are tender offers and mergers. In tender offers, controlling shareholders offer to buy all minority shares at a price that is typically higher than the existing market price (a premium over market price). If enough minority shareholders tender their shares and the controlling shareholders reach a

threshold holding (of 90% of firm equity, for example) the rest of the minority shareholders are forced to sell their shares to the controlling shareholders at the offer price.[1]

In the alternative (reverse triangular) merger venue, the public firm is acquired and merged into a company fully owned by the controlling company. The acquisition price is negotiated with a special committee of independent directors (SC in short), and approved by a majority of the "disinterested" shareholders (majority-of-the-minority, or MOM in short). In the U.S., such a special committee and a majority of the minority vote exempt the deal from an entire fairness review by the court. Restrepo (2018) presents evidence suggesting that the SC + MOM combination is a fair replacement, i.e., yields similar results as the entire fairness procedure.

While the U.S. freeze-out merger regulation has remained relatively stable over the past two decades, with the only exception being the MFW case from 2013 (declaring that the SC+MOM combination may substitute an entire fairness review).[2] U.S. tender freeze-out regulation and judicial approach have been rather fluid if not choppy. In 2001 (Siliconix case), tenders were exempt from entire fairness, a decision partially reversed by the Pure Resources case (in 2002) that recommended MOM as a safeguard against entire fairness, and by the CNX Gas case (in 2010) that empowered the SC.[3] Later on, in 2014, the Delaware General Corporation Law (DGCL) has allowed a new "hybrid" technique based on Section 251(h) of DGCL. This new freeze-out technique, called sometimes an intermediate-form merger, is essentially a tender offer negotiated with a SC and approved by a majority of the minority (MOM) tendering their shares.[4] This new tender technique has since become the

[1]This second-stage, coerced selling, is executed using the short-form merger procedure.

[2]In re MFW S'holders Litig., 67 A.3d 496, 524–36 (Del. Ch. 2013), *aff'd sub nom.* Kahn v. M & F Worldwide Corp., 88 A.3d 635 (Del. 2014).

[3]In re Siliconix Inc. S'holders Litig.,No. Civ. A. 18700, 2001 WL 716787 (Del. Ch. June 19, 2001); In re Pure Resources Inc., Shareholders Litigation 808 A.2d 421 (Del.Ch. 2002); In re CNX Gas Corp. S'holders Litig., 2010 WL 2291842 (Del.Ch May 25, 2010).

[4]See the review and discussion in Sanchez, Razzano and McGurty (2014) who view 251(h) as a development in tender offer legislation. https://www.paulhastings.com/docs/default-source/PDFs/stay-current-251h-tender-offers.pdf.

most popular tender technique – see Butwin, Kwon, Messina, Sullivan, Warner and Zhang (2019), for example.

Delaware's quest for the proper tender and merger freeze-out procedures is not surprising. Grossman and Hart (1980) discuss the different character of tender offers and mergers, and Bebchuk (1987) highlights the relatively higher corporate governance perils of tender offers. The purpose of our study is to contribute to the understanding of freeze-out mergers and tender offers and the choice between them. We analyze theoretically and compare empirically the efficacy and consequences of the tender and merger freeze-out venues. Our novel theoretical model and extensive (based on a relatively large sample) empirical investigation, should provide some valuable insights to scholars, practitioners, and regulators alike.

The theoretical model portrays a controlling shareholder contemplating a freeze-out of minority shareholders and facing a decision about the mechanism of the freeze-out, tender offer or merger. In the tender offer venue the controlling shareholder has to reach a certain threshold holding, say 90%, of all outstanding shares, while in the merger venue she has to get the vote of a pre-determined proportion, say a majority, of minority shareholders to the merger offer terms. The controlling shareholder knows that minority shareholders' perceived value of the stock (value at which they are willing to sell) is uniformly distributed between the current market price and some High price. However, this High price is fuzzy – only the expected value of this price is known. The controlling shareholder then solves the optimal premium for a merger freeze-out offer (tender offer, respectively), computes the probability of offer success and the expected profit of the merger offer (tender offer, respectively). The chosen mechanism, merger or tender offer, is the one that maximizes the expected controlling shareholder value.

The empirical predictions of the model are that freeze-out offer premium increases with the pre-offer holdings of controlling shareholders (proportion of shares held by them) and with the dispersion in minority shareholders valuation of the stock (width of the uniform

distribution of their selling prices). In addition, according to the model, the probability of offer completion depends positively on the pre-offer controlling shareholders' holdings and negatively on the dispersion in minority shareholders' valuation of the stock.

Empirically, we study an economy, Israel, where the bifurcation between freeze-out merger and tender offer regulation appears quite extreme. In Israel, tender offers involve very little formalities. Controlling shareholders may announce a tender offer to the public with no prior Board of Directors' discussion, with minimal disclosure (a short document detailing offer terms and a few price-history statistics), and with no court or regulatory prior consent or discussion. In contrast, the merger freeze-out procedure is structured much like the current one in the U.S., including special committee negotiations and a majority of the minority approval requirement. The almost free-of-hurdles Israeli freeze-out tender offer procedure is interesting on its own (even without the planned tests of the model) because it should provide interesting evidence on the potential effects of an extremely lenient form of freeze-out tender offer regulation. Our Israeli sample, comprising 329 freeze-out offers in 2000-2019, is also larger than that of any previous study of freeze-outs.

The empirical findings are generally consistent with the model. The tender offer venue is preferred when pre-offer controlling shareholders' stake in firm's stock is relatively high. Further, tender offer premiums are positively and significantly related to an estimate of the dispersion of minority shareholders' valuations, and deal completion likelihood increases significantly with controlling shareholders' pre-offer holdings. Further, the relation of tender offer successful completion likelihood to our estimate of the valuation dispersion of minority shareholders is negative (as predicted by the model) yet statistically insignificant, and the relation of offer premium to the pre-offer holdings of controlling shareholders is negative (contrary to the predictions of the model) and statistically insignificant. Our merger freeze-out sample is small (40 freeze-out mergers only), hence all explanatory variables are

statistically insignificant. Nevertheless, the sign of all the coefficients in the merger premium and merger completion likelihood analysis is consistent with the model predictions.

Our model and empirical findings also afford an important comparison with existing U.S. evidence. The main fundamental differences between the economies (as far as freeze-out deals are concerned) are the higher valuation uncertainty in Israel (due to the smaller firm size and less transparency in Israel), the higher pre-offer holdings of controlling shareholders in Israel, and the relatively simpler and cheaper tender offer procedure in Israel. We find that in Israel: 1) most controlling shareholders elect the simple and quick tender offer venue for taking their company private; 2) tender offers offer on average lower premiums than mergers; and 3) tender offers suffer from a relatively large (40%) offer rejection rate. This Israeli evidence is different than the U.S. evidence of preference for merger freeze-outs, and higher completion rates and somewhat higher premia in freeze-out tender offers (relative to freeze-out mergers) - see Restrepo and Subramanian (2015) Table 1 Panel B.

We propose that the lighter tender offer regulation standards of Israel are at least partly responsible for these U.S.-Israel differences. (The freeze-out merger procedures in both countries are similar.) In Israel, due to the "soft" tender offer procedure (that does not require even a board discussion), some controlling shareholders may be tempted to attempt a freeze-out at below-fair premiums, and the suspicious public responds to this possibility by rejecting offers more often. This additional layer of speculative exploitive freeze-out offers may also explain the slight deviation from the theoretical model that we detect in the data.

In any case, the comparison of U.S. and Israeli evidence demonstrates that the tender offer freeze-out procedure is a relatively flexible venue that can be tuned up in several directions. This is our most important insight, and it explains Delaware's continuous quest for an optimal tender procedure.

Section 2 presents a concise background on freeze-out offers. Section 3 develops our theoretical model, and derives testable predictions. Section 4 reviews relevant Israeli regulation,

and describes our freeze-out sample. Section 5 reports the empirical results, and discusses their potential implications. Section 6 concludes.

2 Freeze-out Mechanisms

2.1 The Historical Evolution of Freeze-out Mechanisms in Delaware

In general, the merger freeze-out procedure starts with bilateral negotiations between the controlling shareholder and a special committee of independent directors nominated by the Board of Directors, and involves several ratification stages culminating with a vote of approval by minority shareholders. In comparison, in a typical tender offer, the controlling shareholder discusses offer terms with a special committee of independent directors, issues an offer, and waits for the response (actual bidding of the shares) by minority shareholders. If enough minority shareholders bid their shares, the dissenting minority shareholders are forced to sell their shares (coerced selling) at the offer price, and the freeze-out deal is completed.

Over the past two decades the merger freeze-out procedure for firms incorporated in Delaware has remained fairly stable. The only significant legal change occurred in 2013 when in the MFW case it was determined that merger freeze-outs can be exempt from the stringent entire fairness review providing a SC (Special Committee of independent directors) negotiates merger terms and a MOM (Majority of the Minority shareholders) ratifies the merger deal. This judiciary change was in fact anticipated, as it was mentioned in dicta in 2005 in the Cox Communication case,[5] and deal makers had responded to it since 2005 (Restrepo and Subramanian, 2015).

In contrast, the Delaware tender offer procedure and legal treatment of freeze-out tender offers have been less clear and more fluid. This is because tender offers are in general a

[5] In re Cox Communications, inc. Shareholders litigation, 879 a.2d 604 (Del. Ch. 2005).

more flexible mechanism than mergers and can be misused – see Bebchuk (1987). In 2001, Delaware court decision on Siliconix determined that tender offers are not subject to entire fairness reviews. This court decision was criticized by Subramanian (2005), and was partly reversed in 2002 when, in the Pure Resources case, the court laid-out a list of some (relatively light) pre-conditions for freeze-out tender offers, without which a tender offer would be considered coercive and subject to the entire fairness review. Then, in the 2010 CNX Gas case, the court strengthened the status of the SC in tender offers, effectively granting it a veto power. Last, in 2013 the Delaware General Corporate Law (DGCL) was amended. It added DGCL section 215(h) that states that a tender offer accepted by a majority of shareholders (50%), can be followed by an immediate merger that does not require any shareholders' vote. In 2014, another amendment to the DGCL clarified that Section 251(h) also applies to freeze-out tender offers. This was an important change because prior to it, U.S. tender freeze-outs required controlling shareholders to reach a threshold of 90% of firm equity before they could successfully consummate the going private deal.

The changes in the judicial treatment of freeze-out tenders affected their relative attractiveness. Subramanian (2007) and Restrepo (2013) argue that the Siliconix 2001 decision led to a surge in freeze-out tender offers relative to freeze-out mergers. Similarly, the 2013-14 change in the tender legal treatment was embraced by the market – see Boone, Broughman, and Macias (2017).

2.2 Freeze-out Mechanism Choice and its Economic Consequences

Subramanian (2007) examines the deal structure choice, i.e., the choice between merger and tender freeze-outs. Running a Probit analysis, he finds that tender freeze-outs are more likely in larger deals and when controlling shareholders' pre-deal proportion in firm's equity is higher. In a later study, Restrepo and Subramanian (2015) do not find any relation of

deal structure to deal size. Thus, the only solid evidence is that when pre-deal controlling shareholders proportion in firm's equity is larger, tender offer freeze-outs become more likely.

The logic that explains this deal choice finding is straightforward. Before 2014's adaptation of Section 251(h) to freeze-outs, controlling shareholders needed to reach a threshold of 90% of firm stock before being able to coerce completion of a tender freeze-out deal. Now, as controlling shareholders' stake in the firm increases, their distance to the 90% threshold shortens, that is they need less (and also a lower proportion of) minority shareholders to tender their shares in order to reach the threshold. Given that controlling shareholders naturally prefer the faster tender offer venue, their likelihood of choosing a tender freeze-out increases as their "distance to success" decreases (i.e., when their pre-deal holding proportion increases).

Subramanian (2005) elaborates the pros and cons of freeze-out deals. On the one hand, these transactions can serve legitimate business purposes. For example, buying out minority shareholders can facilitate synergies with other companies affiliated with the controlling shareholder, or may enable controlling shareholders to pursue their idiosyncratic vision that would probably be blocked by minority shareholders (Goshen and Hamdani, 2016). Further, delisting the company can save the compliance costs associated with being a publicly-traded company subject to onerous regulation, and it can conceal sensitive information about the firm from competitors and the public.

On the other hand, even when there is a genuine business rationale for taking the firm private, the controlling shareholders may exploit their informational advantage to time the offer and buy minority shares at a price that does not reflect their fair value (Bebchuk and Kahan, 2000). The law protects minority shareholders against expropriation by controlling shareholders in various ways, some of which are detailed in the previous subsection. However, traditionally, the legal protection procedure of freeze-out tender offers has been lighter be-

cause of the belief that tender offers are voluntary transactions, hence when a large majority of minority shareholders tenders its shares, they essentially vote to approve the deal.

The interesting economic variables to watch are thus the offer acceptance or completion rate, and the premium paid to minority shareholders upon freeze-outs. Regarding premiums, Subramanian (2007) reports that in 2001-2005 (post-Siliconix and pre-Cox period) premiums in freeze-out mergers tended to be higher than those of freeze-out tender offers (possibly because of the less demanding judicial review standards of tender offers at the time). However, following the Cox resolution in 2005 that signaled a "unified" approach to tenders and mergers, freeze-out merger and tender deal premiums and minority shareholders' gains (stock abnormal return) on offer announcement have converged (Restrepo and Subramanian, 2015). The above evidence is consistent with the thesis that the law and legal procedures affect freeze-out premiums.[6]

Regarding freeze-out offer acceptance rate, Restrepo and Subramanian (2015) report completion rates of 73% and 70% for merger freeze-outs before and after 2005 respectively. Completion rates for tender freeze-outs were in general higher – 87% and 77% before and after 2005 respectively. The higher completion rate of freeze-out tender offers resembles the findings regarding regular mergers and tender offers. Offenberg and Pirinsky (2015) report completion rates of 89% and 79% for regular tender offers and mergers, respectively. Offenberg et al. (2015) explain that the higher completion rates may emanate from tender offers' relatively fast completion time, trimming down the risks of market condition changes and of material firm-specific news emergence. The period during which dissenting shareholders can organize is also cut. Hence, ceteris paribus, tender deal completion becomes more certain.

[6] At this junction, we note Restrepo (2018) who documents that the MFW's 2013 change in the freeze-out merger treatment (the drop of the entire fairness requirement for mergers that employ SC + MOM), did not change the premia paid to minority shareholders. Apparently, on average, the combination SC+MOM provides a similar level of minority shareholder protection as the entire fairness procedure.

3 A Model of Freeze-out Tender Offers and Mergers

3.1 Setup

Assume that a controlling shareholder initially owns a proportion α of a firm's shares and is considering a freeze-out takeover of the firm, in which all minority shareholders that choose not to sell their shares willingly are forced to do so at terms identical to those applied to shareholders who choose to sell their shares. The reason for the takeover is the controlling shareholder's assessment that the firm's value under her full control, V_{CONT}, conditional on successfully completing a freeze-out takeover, is larger than V_{MKT}, the firm's current market price that we normalize to one without loss of generality. We also normalize the number of shares in the firm, S, to one, implying that $V_{MKT} = 1$ represents both the firm's overall market value and the current price per share, and V_{CONT} represents both the total and per-share values of the firm post freeze-out takeover, as perceived by the controlling shareholder.

The firm's market price is a result of aggregation of valuations of minority shareholders, with $V_{MKT} = 1$ being the valuation of the marginal minority shareholder. In particular, we assume that minority shareholders' valuations are distributed uniformly between $V_{MKT} = 1$ and $V_H + \epsilon > 1$. V_H is the expected value of the highest valuation by a minority shareholder. V_H, a measure of dispersion of shareholders' valuations, is assumed to be known to the controlling shareholder. ϵ is unknown to the controlling shareholder, and is distributed uniformly in the interval $(-\Delta, \Delta)$, where $\Delta < V_H - V_{MKT} = V_H - 1$, implying that there are always some shareholders that assign a valuation larger than $V_{MKT} = 1$ to the firm. Importantly, Δ is a measure of valuation uncertainty surrounding the firm.

The controlling shareholder has two ways of implementing a freeze-out takeover: a tender offer or a merger. In case of a tender offer, the proportion of *all* shares that the controlling owner needs to hold to enable a freeze-out has to equal or exceed $\tilde{\alpha}_{TO}$. Another way to put

it is that a successful freeze-out tender offer requires an implied proportion $\hat{\alpha}_{TO} = \frac{\tilde{\alpha}_{TO}-\alpha}{1-\alpha}$ of minority shareholders tendering their shares. In the case of a merger, a proportion $\hat{\alpha}_{ME}$ of *minority* shares need to approve the deal in order to allow freeze-out. In order to entice some of the minority shareholders to sell their shares, the controlling shareholder offers a premium over and above the current market price. We denote this premium by μ_{TO} and μ_{ME} in the cases of tender offer and merger, respectively. $V_{MKT} = 1$ implies that μ_{TO} and μ_{ME} represent both proportional and absolute (dollar) offer premia.

There are two differences between the tender offer and merger procedures. The first is that the implied proportion of minority shares required to be acquired for a freeze-out tender offer to succeed, $\hat{\alpha}_{TO}$, is a function of controlling shareholder's pre-offer holdings, α, whereas the proportion needed to be acquired in a freeze-out merger, $\hat{\alpha}_{ME}$, is independent of α and usually equals one half, i.e., a freeze-out merger requires majority of the minority approval in a shareholders' meeting.

Second, the merger procedure is significantly longer than the tender offer procedure, and in the former the controlling shareholder negotiates with minority shareholders' representatives, and becoms gradually more informed about the distribution of minority shareholders' valuations prior to deciding on the takeover premium. To model the latter difference, we assume that in the case of a takeover, no additional signal about the distribution of ϵ is available to the controlling shareholder, i.e. the controlling shareholder's information about the distribution of minority shareholders' valuations is that ϵ is distributed uniformly in the interval $(-\Delta, \Delta)$. In the case of a merger, the controlling shareholder gets a noisy signal about the distribution of ϵ prior to making the merger offer: L or H, with probabilities $\frac{1}{2}$ each. In particular, the controlling shareholder learns whether ϵ belongs to the interval $(-\Delta, 0)$ (if the signal is L) or to the interval $U(0, \Delta)$ (if the signal is H).

3.2 Solution

We begin with the solution of the case of a freeze-out tender offer and then proceed to the case of a freeze-out merger.

3.2.1 Freeze-out Tender Offer

For a given tender offer premium, μ_{TO}, and a given ϵ, the proportion of minority shareholders that decide to tender their shares is given by:

$$\alpha^*_{TO}(\mu_{TO}, \epsilon) = \frac{\mu_{TO}}{V_H + \epsilon - 1}. \tag{1}$$

The probability of the proportion of minority shareholders tendering their shares, $p_{TO}(\mu_{TO})$, exceeding the minimal proportion required for completion of a freeze-out tender offer, $\alpha^*_{TO}(\mu_{TO}, \epsilon)$, is:

$$p_{TO}(\mu_{TO}) = prob(\alpha^*_{TO}(\mu_{TO}, \epsilon) > \hat{\alpha}_{TO}) = prob(\frac{\mu_{TO}}{V_H + \epsilon - 1} > \hat{\alpha}_{TO}) = prob(\mu_{TO} > \hat{\alpha}_{TO}(V_H + \epsilon - 1)). \tag{2}$$

This probability is given by:

$$\begin{aligned} p_{TO}(\mu_{TO}) &= 1 \text{ if } \mu_{TO} > \hat{\alpha}_{TO}(V_H + \Delta - 1), \\ p_{TO}(\mu_{TO}) &= \frac{\mu_{TO} - \hat{\alpha}_{TO}(V_H - \Delta - 1)}{2\hat{\alpha}_{TO}\Delta} \text{ if } \hat{\alpha}_{TO}(V_H - \Delta - 1) \leq \mu_{TO} \leq \hat{\alpha}_{TO}(V_H + \Delta - 1), \\ p_{TO}(\mu_{TO}) &= 0 \text{ if } \mu_{TO} < \hat{\alpha}_{TO}(V_H - \Delta - 1). \end{aligned} \tag{3}$$

The case of $p_{TO}(\mu_{TO}) = 0$ (i.e. $\mu_{TO} < \hat{\alpha}_{TO}(V_H - \Delta - 1)$) can be an equilibrium only if the gains from taking the firm private are too small for the controlling shareholder to initiate a freeze-out tender offer and, therefore, this case is not interesting. The case of $\mu_{TO} > \hat{\alpha}_{TO}(V_H + \Delta - 1)$ cannot be an equilibrium as the controlling shareholder would be

paying too high a premium. Thus, we focus on the intermediate case in which:

$$p_{TO}(\mu_{TO}) = \frac{\mu_{TO} - \hat{\alpha}_{TO}(V_H - \Delta - 1)}{2\hat{\alpha}_{TO}\Delta}. \tag{4}$$

We establish below restrictions on parameter values that ensure that the equilibrium probability of completion of a freeze-out takeover is bounded between zero and one.

The controlling shareholder's objective function is given by:

$$\Pi_{TO} = (V_{CONT} - (1-\alpha)(1+\mu_{TO})) \times p_{TO}(\mu_{TO}) + \alpha \times (1 - p_{TO}(\mu_{TO})). \tag{5}$$

The first part of equation (5) refers to the case in which a freeze-out tender offer is successful (i.e. enough minority shareholders tender their shares), and the second part refers to the case of an unsuccessful freeze-out tender offer. Note that in equation (5) we ignore for brevity both the costs of the freeze-out procedure and the presence of private benefits.

Maximizing the controlling shareholder's terminal value with respect to the takeover premium, μ_{TO}, results in equilibrium takeover premium, μ^*_{TO}:

$$\mu^*_{TO} = \frac{V_{CONT} - 1}{2(1-\alpha)} + \frac{\hat{\alpha}_{TO}(V_H - \Delta - 1)}{2}, \tag{6}$$

and the equilibrium likelihood of completion of freeze-out tender offer, p^*_{TO}:

$$p^*_{TO} = \frac{V_{CONT} - 1}{4\hat{\alpha}_{TO}(1-\alpha)\Delta} - \frac{V_H - \Delta - 1}{4\Delta}. \tag{7}$$

In order for p^*_{TO} to belong to the $[0, 1]$ interval, the following conditions on V_{CONT} need to be satisfied:

$$1 + \hat{\alpha}_{TO}(1-\alpha)(V_H - \Delta - 1) \leq V_{CONT} \leq 1 + \hat{\alpha}_{TO}(1-\alpha)(V_H + 3\Delta - 1). \tag{8}$$

If $V_{CONT} > 1 + \hat{\alpha}_{TO}(1-\alpha)(V_H + 3\Delta - 1)$ then $p^*_{TO} = 1$ and $\mu^*_{TO} = \hat{\alpha}_{TO}(V_H + 3\Delta - 1)$. If $V_{CONT} < 1 + \hat{\alpha}_{TO}(1-\alpha)(V_H - \Delta - 1)$ then $p^*_{TO} = 0$ and μ^*_{TO} is indeterminate, in which case the controlling shareholder would not initiate a freeze-out offer. In what follows, we focus on cases in which the condition in (8) is satisfied and the solution is interior.

3.2.2 Freeze-out Merger

In a merger offer, the shareholder receives a noisy signal, L or H, prior to deciding on the takeover premium. We solve for each of the two cases separately and then compute the expected takeover premium and expected probability of a successful freeze-out merger.

The probability of a successful freeze-out merger for a given takeover premium, $p_{ME}(\mu_{ME})$, in the case of signal H is:

$$p_{ME}(\mu_{ME}) = \frac{\mu_{ME} - \hat{\alpha}_{ME}(V_H - 1)}{\hat{\alpha}_{ME}\Delta}. \tag{9}$$

The difference between this expression and the corresponding probability in the case of a tender offer, is that the set of ϵ is limited to $(0, \Delta)$.

Maximizing the controlling shareholder's objective function as in the case of tender offer, we obtain the following equilibrium takeover premium and probability of freeze-out merger completion conditional on signal H:

$$\mu^*_{ME,H} = \frac{V_{CONT} - 1}{2(1-\alpha)} + \frac{\hat{\alpha}_{ME}(V_H - 1)}{2}, \tag{10}$$

$$p^*_{ME,H} = \frac{V_{CONT} - 1}{2\hat{\alpha}_{ME}(1-\alpha)\Delta} - \frac{V_H - 1}{2\Delta}. \tag{11}$$

The probability of a successful freeze-out merger for a given takeover premium in the case of signal L is:

$$p_{ME}(\mu_{ME}) = \frac{\mu_{ME} - \hat{\alpha}_{ME}(V_H - \Delta - 1)}{\hat{\alpha}_{ME}\Delta}. \tag{12}$$

Maximizing the controlling shareholder's objective function, we get the following equilibrium takeover premium and probability of freeze-out merger completion conditional on signal L:

$$\mu^*_{ME,L} = \frac{V_{CONT} - 1}{2(1-\alpha)} + \frac{\hat{\alpha}_{ME}(V_H - \Delta - 1)}{2}, \tag{13}$$

$$p^*_{ME,L} = \frac{V_{CONT} - 1}{2\hat{\alpha}_{ME}(1-\alpha)\Delta} - \frac{V_H - \Delta - 1}{2\Delta}. \tag{14}$$

The expected takeover premium and probability of freeze-out merger completion, $\bar{\mu}^*_{ME} = \frac{\mu^*_{ME,H}+\mu^*_{ME,L}}{2}$ and $\bar{p}^*_{ME} = \frac{p^*_{ME,H}+p^*_{ME,L}}{2}$, respectively, are:

$$\bar{\mu}^*_{ME} = \frac{V_{CONT} - 1}{2(1-\alpha)} + \frac{\hat{\alpha}_{ME}(V_H - \frac{1}{2}\Delta - 1)}{2}, \tag{15}$$

$$\bar{p}^*_{ME} = \frac{V_{CONT} - 1}{2\hat{\alpha}_{ME}(1-\alpha)\Delta} - \frac{V_H - \frac{1}{2}\Delta - 1}{2\Delta}. \tag{16}$$

The conditions for the interior equilibrium are that $0 \leq p^*_{ME,L} \leq 1$ and $0 \leq p^*_{ME,H} \leq 1$. These conditions can be written as follows:

$$1 + \hat{\alpha}_{ME}(1-\alpha)(V_H - 1) \leq V_{CONT} \leq 1 + \hat{\alpha}_{ME}(1-\alpha)(V_H + \Delta - 1). \tag{17}$$

To make the analysis meaningful, we assume that (17) is satisfied in addition to (8).

3.3 Comparative Statics

In this section, we examine comparative statics of equilibrium takeover premia, equilibrium likelihood of freeze-out takeover completion for both the case ot tender offer freeze-out and the case of merger freeze-out, and the choice of the freeze-out takeover mechanism.

Proposition 1: *Takeover premia in both tender offer and merger freeze-outs are increasing in the controlling shareholder's share of the firm, α, and in the dispersion of minority shareholders' valuations, V_H.*

Proofs of all propositions are provided in Appendix A. The intuition behind Proposition 1 is simple. The larger the controlling owner's pre-takeover share of the firm, the smaller the total cost of overpaying for minority shares, and the more willing the controlling shareholder is to offer a high premium in order to increase the likelihood of freeze-out takeover completion. The larger the dispersion ot shareholders' valuations, the lower the likelihood of a sufficient proportion of shareholders tendering their shares for the freeze-out takeover to succeed for a given takeover premium, and the larger the premium that the controlling shareholder is willing to offer to increase this likelihood.

We illustrate grahically Proposition 1 as well as the propositions that follow in Figures 1-6, using the following base set of parameter values: $V_{CONT} = 2.5$, $V_H = 5$, $\Delta = 2$, $\tilde{\alpha}_{TO} = 0.75$, $\hat{\alpha}_{ME} = 0.5$, $\alpha = 0.5$. In each of the illustrations, we vary one of the parameters above at a time. Proposition 1 is illustrated in Figures 1 and 2. In Figure 1, we vary α in the range [0.4,0.6] and in Figure 2, we vary V_H in the range [4,6].

Proposition 2: *The probability of freeze-out completion in both tender offer and merger is increasing in controlling shareholder's share of the firm, α, and is decreasing in the dispersion of minority shareholders' valuations, V_H.*

The larger the controlling shareholder's pre-takeover stake in the firm, the more she benefits from a completed freeze-out takeover and the larger the takeover premium she is willing to offer, translating into a higher equilibrium likelihood of freeze-out takeover completion. The larger the dispersion of minority shareholders' valuations, the lower the share of minority

shareholders that tender their shares, ceteris paribus, translating into a lower equilibrium probability of sufficient proportion of minority shareholders tendering their shares in equilibrium. Proposition 2 is illustrated in Figures 3 and 4. In Figure 3, we vary α in the range [0.4,0.6] and in Figure 4, we vary V_H in the range [4,6].

Proposition 3: *For sufficiently high valuation uncertainty, Δ, the equilibrium offer premium in a tender offer, μ^*_{TO} is lower than that in a merger, $\bar{\mu}^*_{ME}$.*

The intuition is as follows. Since a merger procedure is lengthy, and more information is revealed along the way, the controlling shareholder makes the decision on the takeover premium while facing less uncertainty regarding minority shareholders' valuations. If the signal about ϵ is H (L), this implies a higher (lower) freeze-out premium. The reduction in the equilibrium freeze-out premium in case of L signal relative to the case of no signal is smaller than the increase in the equilibrium premium in the case of H signal. The reason is that due to the linear relation between takeover premium and the likelihood of takeover success, expected gains from the takeover are quadratic in the takeover premium. Proposition 3 is illustrated in Figure 5. We vary Δ in the range [2,4]. Consistent with the proposition, the takeover premium in a tender offer is lower than the takeover premium in a merger only for sufficiently high Δ.

Proposition 4: *The post-freeze-out value for the controlling shareholder is higher (lower) in case of tender offer (merger) offer for relatively high pre-offer holdings, α.*

The fundamental reason for this result is that the majority of the minority required in merger freeze-outs is constant while the majority of the minority required in tender offers is varying with controlling shareholder holdings.

For relatively high pre-offer holdings, the tender offer venue might be preferred because the controlling shareholder needs to ensure that a relatively low proportion of minority shareholders tender their shares, which results in a relatively high equilibrium likelihood of freeze-out tender offer completion. The opposite is true for relatively low pre-offer holdings. Proposition 4 is illustrated in Figure 6. We vary α in the range [0.4,0.6]. Consistent the proposition, the value to the controlling shareholder of a freeze-out tender offer is higher than that of freeze-out merger for sufficiently high α.

In sum, Propositions 1-4 yield the following testable empirical predictions.

Testable prediction 1: Offer premium (following from Proposition 1): *Freeze-out offer premia in both tender offers and mergers are positively correlated with controlling shareholders' pre-offer holding percentage and with the dispersion in minority shareholders' valuations of the firm.*

Testable prediction 2: Likelihood of takeover completion (following from Proposition 2): *The probability of freeze-out offer completion in both tender offers and mergers is positively correlated with controlling shareholders' pre-offer holding percentage and is negatively correlated with the dispersion in minority shareholders' valuations of the firm.*

Testable prediction 3: Mechanism choice (following from Proposition 4): *The likelihood of choosing the tender offer freeze-out venue increases with the controlling shareholders' pre-offer holding percentage.*

Testable prediction 4: Difference from U.S. evidence (following from Proposition 3): *In Israel, where valuation uncertainty is relatively high, the premia offered in freeze-out tender offers are likely to be lower than those in the U.S. and possibly even lower than those offered in freeze-out mergers.*

Testable prediction 5: Difference from U.S. Evidence (following from Proposition 4): *In Israel, where pre-offer controlling shareholder's holdings tend to be substantially higher than in the U.S., freeze-out tender offers are more likely than in the U.S.*

4 Sample and Data

4.1 The Israeli Environment

Unlike in the U.S., the Israeli law does not require any board discussion or vote on going private tender offers. Further, controlling shareholders making a freeze-out tender offer have no extensive disclosure requirements, and make their offers directly to minority investors. Perhaps as an offset, Israeli law requires that controlling shareholders own at least 95% of the company's shares, before coercing the rest of minority shareholders to sell their shares.[7]

Some minor legal adjustments to going-private tender offers were introduced in 2011 by Amendment 16 to the Israeli Corporate Law. Before 2011, Israeli law granted appraisal rights to all minority shareholders, while after it only dissenting shareholders have appraisal rights. In addition, another clause of Amendment 16 demands a majority of the minority (MOM) approval (i.e., tendering) for successfully completing a freeze-out tender offer. The new MOM requirement constitutes only a trivial modification of the law because even before 2011 the Israeli law effectively demanded a majority of the minority (MOM) approval for tender freeze-outs.[8] Thus, in our opinion, Amendment 16's modifications do not represent a significant change in the legal treatment of freeze-outs.

[7] By law, only single class shares trade in Israel. Therefore, 95% holdings in equity equal 95% of the vote.

[8] The Israeli law does not allow controlling shareholders to hold over 90% of a public company's shares while it demands 95% holdings to affect the freeze-out. Thus, even before Amendment 16 at least half of minority shares needed to be tendered for a successful completion of a tender freeze-out offer. Talking to some legal experts, we heard that before 2011 there were a few cases where parties related to the controlling shareholders (for example firm's CEO) held some shares, and hence the controlling shareholders needed less than a majority of the true untainted minority. The Amendment blocks such rarely observed schemes.

In comparison to tender offers, freeze-out mergers in Israel require a rigorous procedure much like that of the U.S. This includes special committees of independent directors' negotiations with controlling shareholders, board approval, a majority of the minority (MOM) approval and vast public disclosure. Table B.1 in Appendix B highlights the key characteristics of the tender and merger freeze-out procedures in the U.S. and Israel. The merger columns in the table show how similar are the freeze-out merger procedures in U.S. and Israel, while the tender columns reveal the vast differences in freeze-out tender procedures between these two economies.

It is also noteworthy that some Israeli firms execute freeze-outs as part of a court-directed agreement between the company and its shareholders, using Article 350 of the Israeli Corporate Law. This legal procedure, conventionally referred to as a Scheme of Arrangements, is common in several jurisdictions including the United Kingdom, and is reviewed in detail by Payne (2014), for example. Only a few firms elected this venue. Hence, we disregard it.

Last, we note that most (between 80% and 90% of) publicly traded firms in Israel, and all the firms in our sample, have controlling shareholders. Typically, the firms in our sample had an initial public offer at the beginning of the 1990s when the Israeli stock market was booming. With time, the firms that did not grow opted out, as the costs of staying listed exceeded the benefits. The most popular delisting mechanisms in Israel were the going-private freeze-out deals, collected by us and comprising our sample.

4.2 Sample Construction

All our data is collected from the Tel Aviv Stock Exchange (TASE) web site. We search Maya (TASE web site section that assembles all public company announcements) for freeze-out merger and tender offers, and find 329 announcements of such offers in 2000-2019, including 289 tender offers and 40 mergers. From these offer announcements we extract information

about the offer price and the controlling shareholders' holdings in the company on the eve of the offer. If the offer price is revised before the offer deadline, we use the revised offer price. The Maya section also serves to download the annual reports of the companies for the pre-offer fiscal year, from which we extract information on firm's size (total assets), net profits and total debt. From another section of the TASE web site we collect stock return data and company industry classification.

The sample firms are relatively small, and almost all of them belong to the small firm (Yeter) index of TASE. They also do not represent well the industry distribution of TASE firms. The sample industry distribution is as follows (in parentheses we report the TASE corresponding figures): merchandising – 28% (14%), manufacturing – 21% (15%), real estate – 26% (21%), investment and holding – 17% (11%). Interestingly, our sample does not include any technology firm, and encompasses relatively few financial services firms.

4.3 Descriptive Statistics

Table 1 presents descriptive statistics for our freeze-out sample. The sample comprises concentrated-ownership firms. At the end of the quarter preceding the offer, the mean (median) controlling shareholder holdings is 80.8% (84.6%) of firm's equity. These holdings are higher than the corresponding numbers in the U.S., where controlling shareholders' holdings on the eve of a freeze-out offer holdings hover around 60% - see Restrepo and Subramanian (2015) Table 1. More importantly, there appear to be some pre-offer ownership differences between tenders and merger freeze-outs. The mean controlling shareholders' holdings before the offer is 82.6% for tenders and 68.2% for merger freeze-out offers. These differences are expected (consistent with our Testable Prediction 3), and will be examined more closely later on.

The average total assets of all sample firms is 1,143 million New Israeli Shekels (NIS), which given an average exchange rate of about 3.97 NIS per U.S. Dollar during the sample period, equals about 288 million U.S. Dollars. When we split the sample according to deal structure, tender offers appear associated with smaller firms. The mean total assets of firms with tender offers (mergers) is 895 million NIS (2757 million NIS, respectively). Median total assets' differences are however much smaller and statistically insignificant. Insignificant differences between merger and tender offers are also found in firms' leverage (debt/total assets). The mean (median) leverage of our sample firms is 68.4% (65.5%).

Prior to the offer, the sample firms typically exhibit poor financial performance, with a mean (median) Return on Assets (net profits divided by total assets) of -1.5% (2.5%, respectively), and a below-market stock price performance. The mean (median) weekly net of market return of the sample firms in weeks -55 through -6 relative to the offer announcement is -0.29% (-0.16%). The poor performance is also manifested by the ratio of the pre-offer 52-weeks-high-price of the stock to its price on the eve of the offer. The mean premium of the 52 weeks High over stock price on the eve of the offer is 57.2%. (Median is 24.9% only.) Poor performance is demonstrated by both tender and merger freeze-out offer firms.

The 52 weeks High price premium deserves further discussion as it also serves as our measure of the dispersion in minority shareholder valuations of the stock, one of the two key explanatory variables in our theoretical model. We propose that the higher the 52 weeks High price is relative to the pre-offer price, the wider is minority shareholders distribution of the perceived share value (and share voluntary selling price). This is because some of the minority shareholders purchased the stock at its High price, and demand a return relative to it. Thus, a higher 52 weeks High increases VH in our model further, and widens the wedge between pre-offer stock price and VH, a wedge that is the exact valuation dispersion measure dictated by our model. In sum, the premium of the 52 weeks High over pre-offer stock price is our measure of minority shareholders valuation dispersion because it is most

probably positively correlated with the dispersion measure recommended by our model.

Insert Table 1 about here

Table 1 also reviews other interesting descriptive statistics of the freeze-out offers. In our sample, offer acceptance rate is 64% only. This relatively low completion rate is due to the 40% rejection rate of tender offers. Merger freeze-out offers' failure rate is only 7%. The 40% tender offers' rejection rate is higher than in the U.S. – see, for example, the about 16% U.S. tender deal rejection rates reported in Table 1 of Restrepo and Subramanian (2015). It is also larger than the 11% and 15% rejection rates documented in Norway (Bøhren and Krosvik, 2013) and Italy (Bajo, Barbi, Bigelli and Hillier, 2013), respectively. In contrast, our sample merger offers' failure rate of 7% appears much smaller than the about 30% failure rate in U.S. freeze-out mergers (Restrepo and Subramanian, 2015). We discuss these differences later in the paper.

Next we examine the distribution of the freeze-out offer premiums. Sample size is reduced because in 48 tender offers and 2 merger offers, firm stock was not traded in the month preceding the offer (hence a reliable premium could not be calculated). In addition, as a pre-cautionary step, we omit 30 tender offers and 5 merger offers with consistently negative offer premiums, i.e., offers with an offer price that is lower than stock price a week before, a month before and two months before the offer. (If offer price is not lower than all the above three pre-offer stock prices, the offer remains in the sample.) Offers with consistently negative premiums are probably some form of restructuring deals and not the "typical" freeze-out offers that we seek to study.

The mean offer price premium (over stock's price six trading days prior to the offer announcement) is 26.5% (the median is 18.8%).[9] Offer premia appear higher in merger

[9]The choice of stock price on day -6 relative to the announcement is designed to moderate the bias introduced by potential information leakage in the days preceding the freeze-out offer announcement.

offers. The mean (median) premium offered in tender freeze-outs is 24% (18.2%), statistically significantly lower than the respective mean (median) premium of 38.9% (25.2%) recorded in merger freeze-outs.

Last, we present descriptive statistics for accepted offers' premium only. Accepted offers' premiums are slightly higher than offer premiums, yet they exhibit similar behavior and identical patterns.

5 Evidence on Freeze-out Mechanisms and their Consequences

5.1 Univariate Examination of the Key Issues

5.1.1 The choice between a merger and a tender offer

During the sample period (2000-2019) the proportion of tender offers in total freeze-out offers is 87.8% (289 out of a total of 329 offers). This revealed preference of controlling shareholders in Israel for tender offers is consistent with Testable Prediction 5 proposing that in an economy such as Israel where controlling shareholders holdings are on average higher than in the U.S., tender offers are more likely. This model prediction evolves because the majority of minority shareholders needed to complete the deal via a tender offer decreases as controlling shareholder holdings increase, making tender offers more attractive as controlling shareholder holdings increase.

Another reason for favoring tender offers, unaccounted by our model, is tender offers' faster completion time. A shorter time between the offer and its completion guarantees less market and firm specific surprises that can rescind the deal (Offenberg and Pirinsky, 2015). Further, the freeze-out tender offer venue may be particularly favorable among Israeli controlling shareholders also because it involves minimal formalities: no SC, no board dis-

cussion, and no regulatory or court intervention before the offer is made. Israeli controlling shareholders can publish a short document and wait (typically about three weeks) till the final tendering date.[10] Last, the simple procedure of freeze-out tender offers in Israel may also tempt some controlling shareholders to misuse it, i.e., attempt unfair freeze-out tender offers when company shares are undervalued. Using the terminology of Atanasov, Black and Ciccotello (2011) this constitutes an equity tunneling attempt.

5.1.2 Freeze-out offer premium

Because of the existence of outliers we employ in the empirical analysis of freeze-out offer premiums the winsorized (at the 5% and 95% levels) offer premium. For brevity, the winsorized premium is referred to as the premium henceforth. The mean premium in tender offers is 23.4%, statistically significantly lower than the mean premium in mergers that is 35.1%. In the completed deals subsample, the mean offer premium disparity is similar, 23.7% in tender offers versus 36.2% in merger offers.

The finding of a lower premium in tender offers is consistent with Testable Prediction 4 of the model. However, some factors outside the model may also contribute to it. For example, opportunistic tender offer attempts by controlling shareholders (involving exploitive below-par premiums) decrease the mean premium of tender offers. And, the lengthy procedure of merger freeze-outs might enable minority shareholders to extract a higher than fair premium in mergers. (Controlling shareholders often complain that they succumbed to minority shareholders' "extortion".) Thus, the lower mean premium in freeze-out tender offers is not surprising.

[10] The Israeli regulation stipulates a minimal tendering period of two weeks.

5.1.3 Offer completion likelihood

In our sample freeze-out tender offer completion rate (59.9%) is significantly lower than merger offer completion rate (92.5%). In the U.S., opposite evidence is documented - freeze-out tender offer completion rates are higher than those of mergers (Restrepo and Subramanian, 2015, Table 1). Interestingly, this evidence is consistent with our model which proposes that the difference in completion likelihood between tender- and merger-offers depends on various parameters characterizing the economy and its freeze-out legal procedures.

However, there also exists a clear rational for our probability of offer completion evidence. In Israel, the tender offer procedure is simpler and involves a lower premium, on average, than the competing freeze-out merger venue. Thus, from the point of view of controlling shareholders, the merger freeze-out mechanism is unattractive, unless it offers an offsetting advantage. The offsetting advantage of the merger offer mechanism is the higher certainty of deal completion. According to our findings, controlling shareholders choosing the longer and more expensive (higher transaction costs and higher premiums) freeze-out merger procedure, are rewarded by a higher than 90% deal completion probability. Merger freeze-out appear as the expensive yet "safe" freeze-out alternative.

5.2 Tests of the Model

Table 2 documents tests of the model. The first two columns report tests of the Choice of Mechanism proposition (Testable Prediction 3). Column (1) reports the results of a Probit analysis and column (2) of an OLS regression. The dependent variable is a dummy variable equal to 1 when the freeze-out offer is a tender offer (and 0 when it is a merger offer). Controlling shareholder pre-offer holdings, as a proportion of firm equity, is the key explanatory variable, accompanied by industry fixed effects and calendar year fixed effects. Residual standard deviations are clustered at the firm level. We show both OLS and

Probit results because in the Probit analysis many observations are dropped due to perfect predictions in a specific calendar year or industry.

In both columns (1) and (2), the coefficient of controlling shareholders' pre-offer holding proportion is positive and highly statistically significant. Consistent with Testable Prediction 3 of the model, higher pre-offer controlling shareholder holdings increase the appeal and actual choice of the tender offer freeze-out procedure. Subramanian (2007) presents a similar result in U.S. freeze-out data, hence the preference of tender offers amongst controlling shareholders with relatively high pre-offer holdings is not surprising. Intuitively, when controlling shareholders pre-offer stake in firm shares is relatively high, their "distance to success" in a tender offer shortens, as they need a lower proportion of minority shareholders to tender their shares for successfully completing the tender offer.[11]

Insert Table 2 about here

Columns (3) and (4) report the offer premium analysis results. Column (3) examines Testable Prediction 1 in the tender offer subsample. Consistent with the model, the coefficient of the 52 weeks High price premium is positive and statistically significant. Apparently, a higher minority shareholders valuation dispersion commands or actually forces the controlling shareholders to offer a higher premium. The coefficient of controlling shareholders pre-offer holdings is negative and statistically insignificant (t-statistic of -0.6). This finding is inconsistent with the predictions of the model of a positive relation between tender offer premium and controlling shareholder pre-offer holdings.

Column (4) summarizes tests of Testable Prediction 1 in the merger subsample. Consistent with the model, the coefficient of the 52 weeks High price premium is positive and

[11]For example, if the controlling shareholder holds 50% of company shares, then a tender offer will be accepted only if more than 90% ($\frac{95-50}{100-50}$) of the minority shareholders will actively send a note of acceptance of the tender offer. In comparison, if controlling shareholders' pre-deal holdings are 80%, the acceptance rate guaranteeing offer success decreases to 75% ($\frac{95-80}{100-80}$).

the coefficient of pre-offer controlling shareholders holdings is positive. However, due to the small sample size (38 merger offers only), none of the coefficients is statistically significant.

Columns (5) and (6) report results of tests of the deal completion likelihood proposition (Testable Prediction 2). In general, the findings support the model. All the coefficients in columns (5) and (6) have the signs predicted by the model. Higher controlling shareholders pre-offer holdings increase offer completion likelihood (i.e., the chance that the offer will end up in a real going-private deal), and a wider dispersion of minority shareholder valuations decreases the chance that the going-private deal will be consummated. However, only the coefficient of controlling shareholders pre-offer holdings in the tender offer Probit analysis in column (5) is statistically significant. The statistically insignificant results in the merger subsample analysis in column (6) are expected given the small sample size that also forces us to run the merger offer analysis using an OLS regression (Probit would decrease sample size further).

As a robustness test, we replicate all the tests reported in Table 2, adding to each analysis firm total assets, leverage and ROA as explanatory variables. None of the coefficients of our two fundamental explanatory variables, controlling shareholders holdings and 52 weeks High price premium, changes its sign or statistical significance (relative to Table 2), and in almost all cases the coefficients of the added firm characteristics are statistically insignificant.

We have also explored adding the offer price premium (relative to pre-offer stock price) to our "likelihood of offer completion" analysis in columns (5) and (6). Higher offer premium should ceteris paribus increase offer completion probability. In both the Probit of tender offers and OLS of mergers, the offer premium scores a positive coefficient with a p-value of 0.20 to 0.25. More important, the coefficient of controlling shareholder holdings continues to be positive (and statistically significant in the tender offer Probit), and the coefficient of the 52 weeks High premium remains negative.

5.3 Freeze-out Offer Litigation

It is interesting to inquire whether the light tender offer freeze-out procedure in Israel generates a wave of post-completion litigation (class action suits). We have reviewed Maya (the Tel-Aviv Stock Exchange web site section presenting all company announcements) and the NEVO legal database for data on freeze-out litigation. Table 3 summarizes our litigation evidence for 210 completed freeze-out tender offers and reverse-triangular mergers.

Insert Table 3 about here

In the overall period, 2000-2019, we found only 14 litigations, 5 for mergers and 9 for tender offers. The litigation rate of about 6.7% is much lower than the litigation rate of 80% to 90% recorded in the U.S. – see Cornerstone Research (2019).[12] Also surprising, the tender offer litigation rate of 5.2% is less than half of the mergers' litigation rate of 13.5%. Evidently, post-completion class action suits against tender offers occur relatively rarely. It appears that the quick and perhaps "sloppy" Israeli tender offer procedure does not raise serious post completion opposition, despite of the fact that the Israeli law grants explicit rights to challenge the tender freeze-out's consideration via an appraisal remedy. In contrast, the long and tolerant process of merger freeze-outs (including SC negotiations + MOM requirement) does not appease minority shareholders who submit lawsuits against it relatively frequently.

One cynical interpretation of this finding is that a more considerate approach such as a merger also facilitates a more thorough discussion of the freeze-out related issues, a discussion that naturally generates more potential objections. In contrast, the relatively aggressive procedure of Israeli freeze-out tender offers makes it difficult for dissenting minority share-

[12] This finding may be a result of Israel's less welcoming regulation of shareholders' class-action litigation, including the following items: 1) lead plaintiff must pay a court fee before filing the suit; 2) if litigation fails, lead plaintiff can be asked to reimburse defendant's legal expense; 3) plaintiffs' lawyers are awarded only when the class-action ends with a monetary compensation to shareholders.

holders to sue because the plaintiffs have to collect and analyze all data by themselves - the tender offer itself provides little information and ammunition for would-be plaintiffs.[13]

The above "information available to potential plaintiffs" thesis also predicts that litigation about mergers would be better-reasoned than litigation regarding tender offers. This prediction appears consistent with the data. In four out of the five law suits against merger freeze-out the plaintiffs won. In comparison, only in four out the nine law suits against freeze-out tender offers the plaintiffs won.

5.4 Discussion

5.4.1 An evaluation of the model

The overall empirical performance of the theoretical model proposed in this paper appears fair. In the model tests of Table 2 we report ten coefficients, and nine of them have the sign predicted by the model. Four of the ten coefficients are statistically significant and in the direction predicted by the model. Thus, the model appears to be consistent with the data.

However, the model does not take into account at least two real-life factors. First, the freeze-out tender procedure in Israel is much simpler and cheaper (in terms of transaction costs) than the freeze-out merger procedure. This is an important factor leading controlling shareholders to favor freeze-out tenders.

Second, these relatively low tender offer costs may tempt some controlling shareholders to attempt exploitive freeze-out tender offers at a below-fair premium. Such opportunistic controlling shareholder behavior can succeed when minority shareholders are "weak", that

[13]Other non-mutually exclusive potential reasons for the higher litigation rate of merger freeze-outs are: 1) mergers transaction are, on average, larger than tender offers, and minority shareholders' holdings are higher; therefore plaintiffs' lawyer can sue for larger amounts; 2) in mergers, if plaintiffs can show a flaw in the deal process, than the burden of proof shifts toward the defendant. In tender-offers' appraisal suits, the deal process in not evaluated.

is when controlling shareholders holdings are relatively high or when the firm and its stock are in trouble.

The "weak minority shareholders" thesis can possibly explain the only coefficient in Table 2 that is inconsistent with the model – the negative (yet statistically insignificant) coefficient of controlling shareholders holdings in the tender offer premium regression (column 3). For if exploitive tender offers are encouraged by controlling shareholders power (high pre-offer holdings by controlling shareholders), exploitive tender offers become more likely as controlling shareholders holdings increase. The exploitive offers insert into our data a decrease of the premium as controlling shareholder holdings increase, and tilt the coefficient of controlling shareholders holdings in the tender offer premium regression towards negative values. Such a tilt is not present in the merger premium regression, where the coefficient of controlling shareholder holdings remains positive, because opportunistic controlling shareholders prefer the simple and quick tender offer freeze-out venue.

Future elaborations of the model should encompass cost differences between the freeze-out procedures as well as the effects of controlling shareholder's power on "weak" minority shareholders. Bargaining between controlling shareholders and minority shareholders and game-theoretic directions might also improve the model. Last, the model can be augmented by incorporating the more elementary controlling shareholders dilemma of: To go-private or to stay listed? Thus, our model appears as a first step towards a better understanding of freeze-outs.

5.4.2 Lessons from a comparison with U.S. evidence

The Israeli freeze-out evidence differs substantially from U.S. evidence. In Israel freeze-out tender offer completion rate is much lower than that of merger offers, whereas in Delaware freeze-outs tender offer completion rate is higher. It appears that the little formalities of freeze-out tender offers in Israel encourage some controlling shareholders to give opportunistic

freeze-out offers in an attempt to expropriate minority shareholders. As a response, Israeli minority shareholders tend to reject freeze-out tender offers more often than they reject mergers. Given that freeze-out mergers in Israel employ a rigorous ordinate procedure much like that of mergers in Delaware, we conclude that the "distortion" in the tender procedure in Israel is the culprit or at least one of the key reasons for the opposing deal completion findings in Israel and Delaware.

The lighter freeze-out tender offer procedure in Israel also helps explaining why controlling shareholders in Israel prefer it over the alternative merger procedure. In the U.S. controlling shareholders prefer the merger freeze-out procedure also because their pre-offer holdings are lower. According to Restrepo and Subramanian (2015)'s Table 1, pre-offer controlling shareholder holdings in Delaware freeze-outs average about 60%, while in Israel they average over 80% (see our Table 1). Higher pre-offer holdings lower the proportion of minority shareholders that controlling shareholder need to convince to tender their shares in case of a tender offer, hence it increases the likelihood of a tender offer. An increase in controlling shareholder holdings increases tender offer attractiveness and choice according to this paper theoretical model as well.

Given that the diverse or opposite Israel and U.S. evidence on the preferred freeze-out procedure choice and on offer success or completion likelihood, it is not surprising that the offer premium behavior also appears different. In the U.S. tender offer premiums appear higher than merger offer premiums, whereas in Israel tender offer premiums are significantly lower than the premiums offered in mergers. Again, we propose that the simple, cheap and quick freeze-out tender offer procedure in Israel encourages some exploitive freeze-out offers at below-fair premiums. These offers decrease the average premium offered by freeze-out tender offers in Israel.

The diverging Israel and U.S. evidence discussed above is an indication that the tender offer procedure has a non-trivial impact on the tender freeze-out consequences. Given this

evidence, it is easier to understand Delaware's law and jurisdiction relatively frequent adjustments of the tender offer procedure. The tender offer procedure must be tuned to achieve the desired end result. This is perhaps the most important general message of our study.

5.4.3 The viability of two alternative freeze-out mechanisms

The above discussion also raises the question of: Is it prudent to have two alternative freeze-out techniques? Indeed, the "unified" approach gradually adopted by Delaware since the beginning of the 21st century minimizes the differences between merger and tender freeze-out mergers.

Our evidence on Israel suggests that when there exist two truly-different freeze-out procedures, there are some controlling shareholders that exploit the system to issue unfair freeze-out offers that expropriate minority shareholders (a form of "equity tunneling"). On the other hand, the procedure simplicity affords freeze-outs when stock listing is no longer economically efficient. Controlling shareholders favor the simple tender offer process.[14]

The revealed preference for the tender offer venue in Israel coupled with the rare minority shareholders' litigation against it probably explain why the Israeli tender offer freeze-out procedure is not amended. In essence, Israeli law prefers a wide menu of freeze-out offer techniques as it encourages deal making (at the cost of facilitating some potentially unfair deals), while Delaware's cautious "unified approach" to tender offers and mergers sacrifices some legitimate freeze-out deals on the altar of fairness. Neither approach appears to us dominant. We think that the main reason for the choice made in Israel is the prevalence of concentrated-ownership firms amongst the listed firms. Between 80 and 90% of firms listed on the Tel-Aviv Stock Exchange have controlling shareholders. This raises the importance

[14] We have further examined what controlling shareholders in Israel do in case their freeze-out tender offer is rejected. For 59 of the 116 rejected tender offers, i.e., for about half of the rejected tender offers, we find that controlling shareholders return to the market with another freeze-out offer. Out of these 59 repeated offers, 51 take the form of a tender offer and 8 are reverse triangular merger attempts. Evidently, even after failing with a tender offer, controlling shareholders still prefer this route.

of facilitating freeze-out deal making in Israel. In addition, the optimal balance between free and fair deal making is also a matter of culture or taste.

6 Summary and Conclusions

In the past two decades, the optimal procedure and legal treatment of tender freeze-out offers has been heavily debated in Delaware, resulting in relatively frequent adjustments of the law and jurisdiction. To assist thinking and knowledge on freeze-out procedures and their consequences, we develop a model of freeze-out tender and merger offers and derive its propositions regarding freeze-out offer structure choice (tender offer or merger), offer premium and offer success likelihood.

We also present empirical tests of the model using Israeli freeze-out data. In Israel, the merger freeze-out mechanism is almost identical to that of Delaware, while the freeze-out tender offer mechanism is lightly regulated and vastly different than in Delaware. The extreme bifurcation of freeze-out mechanisms in Israel, and the close resemblance of the merger procedure in Israel and Delaware, make Israel an attractive test field for freeze-out models.

Our empirical findings tend to support the theoretical model. However, interestingly, Israeli evidence is often opposite to U.S. evidence. In Israel most freeze-out offers take the form of tender offers, while in the U.S. most freeze-outs choose the merger route. In Israel premiums are higher for merger freeze-outs, whereas in the U.S. premiums appear to be higher in tender offers. Last, in Israel (U.S.), freeze-out offer acceptance rate is higher for merger offers (tender offers, respectively).

The divergence of outcomes in Israel and the U.S. is at least partly due to the different tender offer formulation. Thus, the central takeaway of our findings is that the formulation of the tender offer procedure has a strong impact on its consequences. Tender offers are

a delicate procedure that can be tuned in different directions. Accordingly, Delaware's relatively frequent adjustments of the takeover offer procedure may represent a genuine attempt to tune up the tender venue.

We also argue that the Israeli choice of allowing two significantly different freeze-out procedures is rational, given the predominance of listed firms with controlling shareholders in Israel. The simple tender freeze-out procedure facilitates execution of efficient freeze-outs, and this deal-making advantage might downplay the obvious shortcoming of a lightly regulated tender offer procedure, i.e. the possibility that some controlling shareholders would use freeze-out tender offers to expropriate the minority.

Future studies can further develop our model, incorporating exploitive freeze-out offer attempts and/or bargaining between controlling shareholders and the minority. Another intriguing direction would address and add to our model the preliminary going-private decision itself. Similarly, the empirical tests of the model should be extended to other economic environments. The ritual call for further research is reiterated.

References

Atanasov, V., Black, B.S., and Ciccotello, C.S. (2011). Law and tunneling. *Journal of Corporation Law* 37: 1-49.

Bajo, E., Barbi, M., Bigelli, M., and Hillier, D. (2013). The role of institutional investors in public-to-private transactions. *Journal of Banking and Finance* 37: 4327-4336.

Bebchuk, L. (1987). The pressure to tender: An analysis and a proposed remedy. *Delaware Journal of Corporate Law* 12: 911-949.

Bebchuk, L., and Kahan, M. (2000). Adverse selection and gains to controllers in corporate freeze-outs. In Morck, R., ed., Concentrated Corporate Ownership (*University of Chicago Press, Chicago*, pp. 247–59).

Bøhren, Ø., and Krosvik, N. (2013). The economics of minority freeze-outs: Evidence from the courtroom. *International Review of Law and Economics* 36: 48-58.

Boone, A., Broughman, B., and Macias, A. (2017). Shareholder decision rights in acquisitions: Evidence from tender offers. Indiana Legal Studies Research Paper No. 331. https://ssrn.com/abstract=2629424

Butwin, B., Kwon, U., Messina, M., Sullivan, K., Warner, D., and Zhang, R. (2019). A look at U.S. sponsor-backed going private transactions. Weil, Gotshal & Manges LLP. https://www.jdsupra.com/legalnews/a-look-at-u-s-sponsor-backed-going-48676/

Cornerstone Research (2019). Shareholders litigation involving acquisition of public companies. https://www.cornerstone.com/Publications/Reports/Shareholder-Litigation-Involving\-Acquisitions-of-Public-Companies-Review-of-2018-M-and-A-Litigation-pdf.

Doidge, C., Kahle, K., Karolyi, A., and Stulz, R. (2018). Eclipse of the public corporation or eclipse of the public markets? *Journal of Applied Corporate Finance* 30(1): 8–16.

Doidge, C., Karolyi, A., and Stulz, R. (2017). The U.S. listing gap. *Journal of Financial Economics* 123: 464-487.

Gao, X., Ritter, J., and Zhu, Z. (2013). Where have all the IPOs gone? *Journal of Financial and Quantitative Analysis* 48(6): 1663-1692.

Goshen, Z., and Hamdani, A. (2016). Corporate control and idiosyncratic vision, *Yale Law Journal* 125: 560-617.

Grossman, S., and Hart, G. (1980). Takeover bids, the free-rider problem, and the theory of the corporation. *Bell Journal of Economics* 11(1): 42-64.

Kahle, K., and Stulz, R. (2017). Is the public corporation in trouble? *Journal of Economic Perspectives* 31(3): 67-88.

Lauterbach, B., and Mugerman, Y. (2020). The effect of institutional investors' voice on the terms and outcome of freeze-out tender offers. *Quarterly Journal of Finance* 10: 1-33.

Offenberg, D., and Pirinsky, C. (2015). How do acquirers choose between mergers and tender offers? *Journal of Financial Economics* 116(2): 331-348.

Payne, J. (2014). Schemes of Arrangement: Theory, Structure, and Operation. Cambridge University Press.

Restrepo, F. (2013). Do different standards of judicial review affect the gains of minority shareholders in freeze-out transactions? A re-examination of Siliconix. *Harvard Business Law Review* 3: 321-359.

Restrepo, F. (2018). Judicial deference, procedural protections, and deal outcomes in freezeout transactions: Evidence from the effect of MFW. https://ssrn.com/abstract=3105169.

Restrepo, F., and Subramanian, G. (2015). The effect of Delaware doctrine on freeze-out structure and outcomes: Evidence on the unified approach. *Harvard Business Law Review* 5: 205-236.

Sanchez, C., Razzano, E., and McGurty, L. (2014). Tender offers: Past, present and future - the evolution of Section 251(h). Paul Hastings LLP. https://www.paulhastings.com/docs/default-source/PDFs/stay-current-251h-tender-offers.pdf.

Subramanian, G. (2005). Fixing freeze-outs. *Yale Law Journal* 36: 2-59.

Subramanian, G. (2007). Post-Siliconix freeze-outs: Theory and evidence. *Journal of Legal Studies* 36: 1-26.

Appendix A: Proofs

Proof of Proposition 1

$$\frac{\partial \mu^*_{TO}}{\partial \alpha} = \frac{V_{CONT} - 1 - \hat{\alpha}_{TO}(1-\alpha)(V_H - \Delta - 1)}{2(1-\alpha)^2}.$$

From the condition for profitability of a freeze-out merger in (8), $\frac{\partial \mu^*_{TO}}{\partial \alpha} > 0$.

$$\frac{\partial \bar{\mu}^*_{ME}}{\partial \alpha} = \frac{V_{CONT} - 1}{2(1-\alpha)^2} > 0.$$

In addition,

$$\frac{\partial \mu^*_{TO}}{\partial V_H} = \frac{\hat{\alpha}_{TO}}{2} > 0.$$
$$\frac{\partial \bar{\mu}^*_{ME}}{\partial V_H} = \frac{\hat{\alpha}_{ME}}{2} > 0.$$

Proof of Proposition 2

$$\frac{\partial p^*_{TO}}{\partial \alpha} = \frac{V_{CONT} - 1}{4\hat{\alpha}^2_{TO}(1-\alpha)^2\Delta} > 0.$$
$$\frac{\partial \bar{p}^*_{ME}}{\partial \alpha} = \frac{V_{CONT} - 1}{2\hat{\alpha}_{ME}(1-\alpha)^2\Delta} > 0.$$

In addition,

$$\frac{\partial p^*_{TO}}{\partial V_H} = -\frac{1}{4\Delta} < 0.$$
$$\frac{\partial \bar{p}^*_{ME}}{\partial V_H} = -\frac{1}{2\Delta} < 0.$$

Proof of Proposition 3

$$\mu^*_{TO} - \bar{\mu}^*_{ME} = \frac{2(\hat{\alpha}_{TO} - \hat{\alpha}_{ME})(V_H - \Delta - 1) - \hat{\alpha}_{ME}\Delta}{4}.$$

For $\Delta \to V_H - 1$, $\mu^*_{TO} - \bar{\mu}^*_{ME} \to -\frac{\hat{\alpha}_{ME}(V_H-1)}{4} < 0$.
In addition,

$$\frac{\partial \mu^*_{TO} - \bar{\mu}^*_{ME}}{\partial \Delta} = \frac{-2\hat{\alpha}_{TO} + \hat{\alpha}_{ME}}{4}.$$

$-2\hat{\alpha}_{TO} + \hat{\alpha}_{ME} < 0$ because the majority of the minority required in tender offers is in almost all cases larger than one half of the majority of the minority required in mergers. Thus, $\frac{\partial \mu^*_{TO} - \bar{\mu}^*_{ME}}{\partial \Delta} < 0$. Thus, there exists a range of (high) Δ for which $\mu^*_{TO} - \bar{\mu}^*_{ME} < 0$.

Proof of Proposition 4
As is evident from the controlling shareholder's maximization problem in (5), the post-freeze-out value is:
a) decreasing in the takeover premium, and
b) increasing in the likelihood of successful freeze-out completion.
For $\alpha \to \tilde{\alpha}_{TO}$,

$$\mu^*_{TO} - \bar{\mu}^*_{ME} = \frac{-2\hat{\alpha}_{ME}(V_H - \Delta - 1) - \hat{\alpha}_{ME}\Delta}{4} < 0,$$

$$p^*_{TO} - \bar{p}^*_{ME} = \frac{V_{CONT} - 1}{4(1 - \tilde{\alpha}_{TO})\Delta} > 0.$$

Thus, for sufficiently high α, the takeover premium is smaller for tender offer freeze-out and the likelihood of completion is higher for tender offer freeze-out. In addition,

$$\frac{\partial(\mu^*_{TO} - \bar{\mu}^*_{ME})}{\partial \alpha} = -\frac{(1 - \tilde{\alpha}_{TO})(V_H - \Delta - 1)}{2(1 - \alpha)^2} < 0,$$

and

$$\frac{\partial(p^*_{TO} - \bar{p}^*_{ME})}{\partial \alpha} = \frac{(V_{CONT} - 1)(-2\hat{\alpha}^2_{TO} + \hat{\alpha}_{ME})}{4\hat{\alpha}^2_{TO}\hat{\alpha}_{ME}(1 - \alpha)^2\Delta}.$$

Given a high $\tilde{\alpha}_{TO}$, as in Israel, for relatively high α (e.g., $\alpha \to \tilde{\alpha}_{TO}$), $\frac{\partial(p^*_{TO} - \bar{p}^*_{ME})}{\partial \alpha} > 0$. Thus, there exists a range of high enough α, such that $\mu^*_{TO} < \bar{\mu}^*_{ME}$, i.e. the takeover premium is smaller for tender offer freeze-out and $p^*_{TO} > \bar{p}^*_{ME}$, i.e. the likelihood of completion is higher for tender offer freeze-out. Therefore, there exists a range of sufficiently high α, for which the controlling shareholder's expected value in the case of freeze-out tender offer is higher than that in the case of merger freeze-out.

Appendix B: A tabular review of the legal freeze-out procedures

Table B.1: A Comparison of the Legal Merger and Tender Offer Freeze-out Procedures in the U.S. and Israel

This table highlights the key characteristics of the merger and tender freeze-out procedures we study. The tabular presentation and comparison is inescapably sketchy and nonexhaustive.

Characteristic	Merger (US)	Merger (Israel)	Tender offer (US)	Tender offer (Israel)
Threshold majority of minority shares needed for offer completion	50%	50%	50-90% (from 2014: 50%; Before that: 90%)	95%
Majority of the minority shareholders (MOM)	Yes (from 2013)	Yes	Yes	Yes (officially since 2011)
Board approval	Yes	Yes	Yes	No
Special committee (SC) negotiations	Yes	Yes (from 2011)	Yes	No
Fairness opinion	Yes	Yes	Yes	No[1]
Appraisal rights	Yes	No	Yes	Yes
Extensive disclosure	Yes	Yes	Yes	No

[1] Not required by law, yet sometimes provided voluntarily.

Figure 1: Illustration of Proposition 1 – part 1

This figure presents the relation between takeover premia, μ^*_{TO} and $\bar{\mu}^*_{ME}$ and controlling owner's pre-takeover share of the firm, α. We use the following parameter values: $V_{CONT} = 2.5$, $V_H = 5$, $\Delta = 2$, $\tilde{\alpha}_{TO} = 0.75$, $\hat{\alpha}_{ME} = 0.5$.

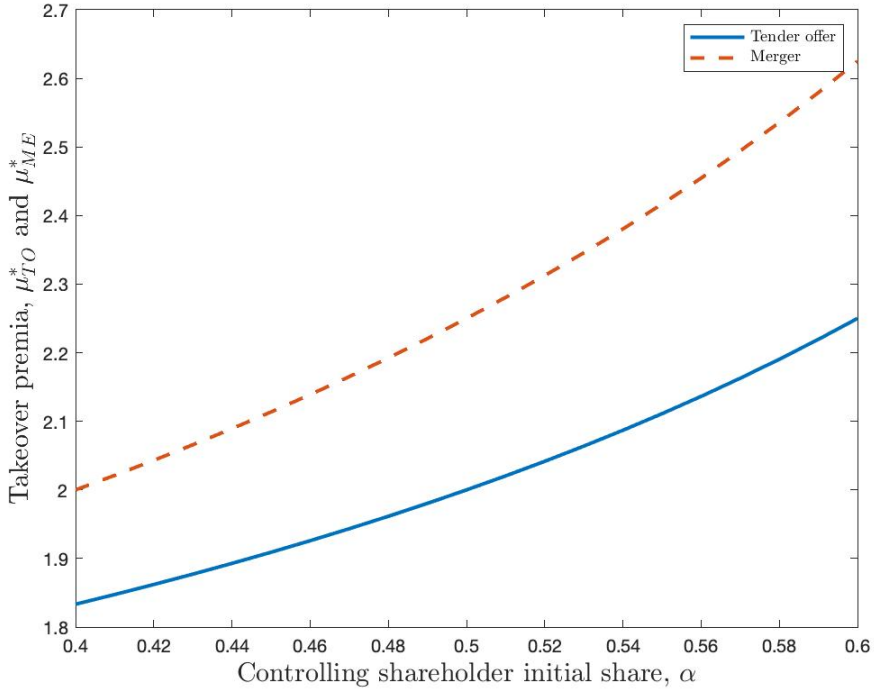

Figure 2: Illustration of Proposition 1 – part 2

This figure presents the relation between takeover premia, μ^*_{TO} and $\bar{\mu}^*_{ME}$ and controlling owner's pre-takeover share of the firm, α. We use the following parameter values: $V_{CONT} = 2.5$, $V_H = 5$, $\Delta = 2$, $\tilde{\alpha}_{TO} = 0.75$, $\hat{\alpha}_{ME} = 0.5$.

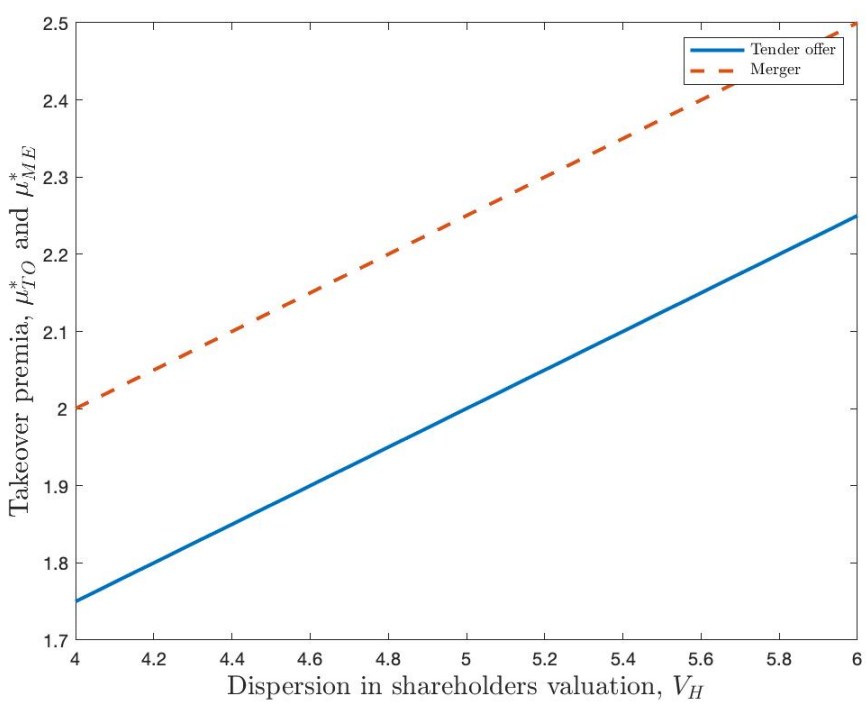

Figure 3: Illustration of Proposition 2 – part 1

This figure presents the relation between the probability of freeze-out takeover success, p^*_{TO} and $\bar{p}^*_{ME}$ and controlling owner's pre-takeover share of the firm, α. We use the following parameter values: $V_{CONT} = 2.5$, $V_H = 5$, $\Delta = 2$, $\tilde{\alpha}_{TO} = 0.75$, $\hat{\alpha}_{ME} = 0.5$.

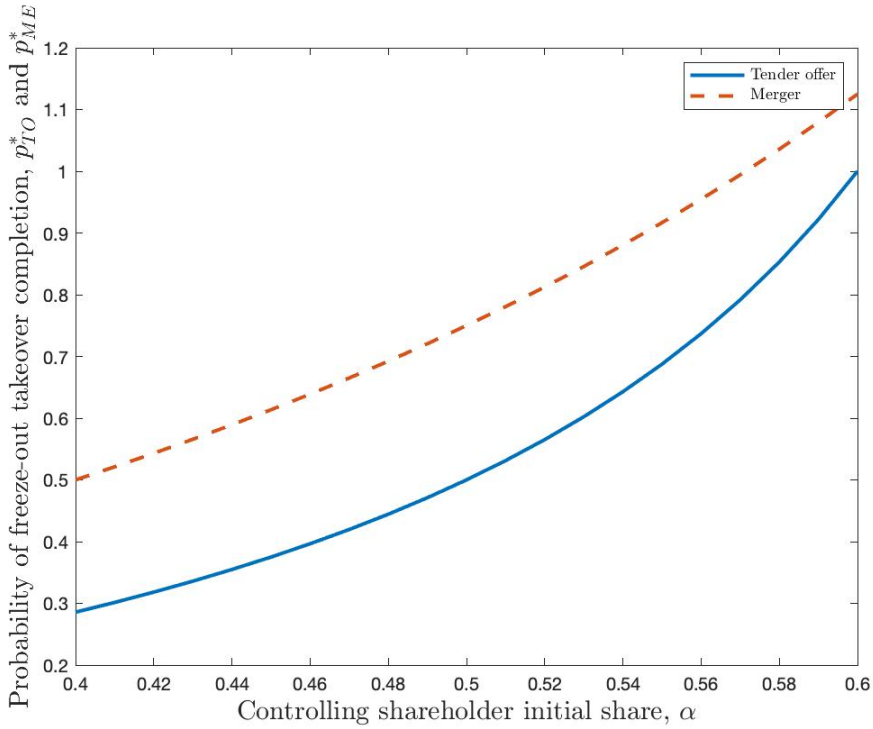

Figure 4: Illustration of Proposition 2 – part 2

This figure presents the relation between the probability of freeze-out takeover success, p^*_{TO} and $\bar{p}^*_{ME}$ and the dispersion in minority shareholders' valuations, V_H. We use the following parameter values: $V_{CONT} = 2.5$, $\alpha = 0.5$, $\Delta = 2$, $\tilde{\alpha}_{TO} = 0.75$, $\hat{\alpha}_{ME} = 0.5$.

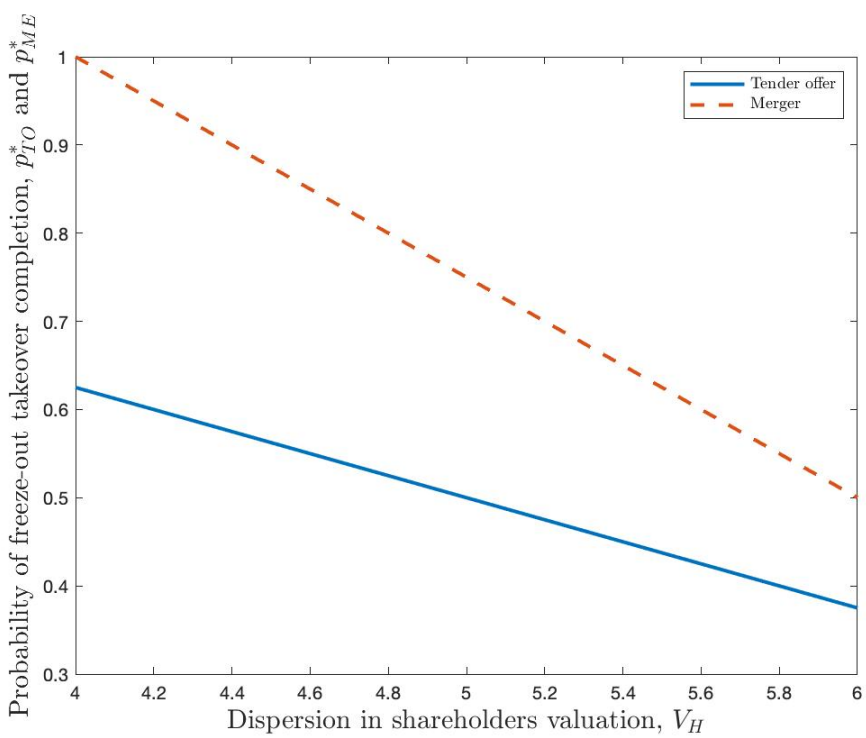

Figure 5: Illustration of Proposition 3

This figure presents the relation between takeover premia, μ^*_{TO} and $\bar{\mu}^*_{ME}$ and valuation uncertainty, Δ. We use the following parameter values: $V_{CONT} = 2.5$, $\alpha = 0.5$, $V_H = 5$, $\tilde{\alpha}_{TO} = 0.75$, $\hat{\alpha}_{ME} = 0.5$, $\alpha = 0.5$.

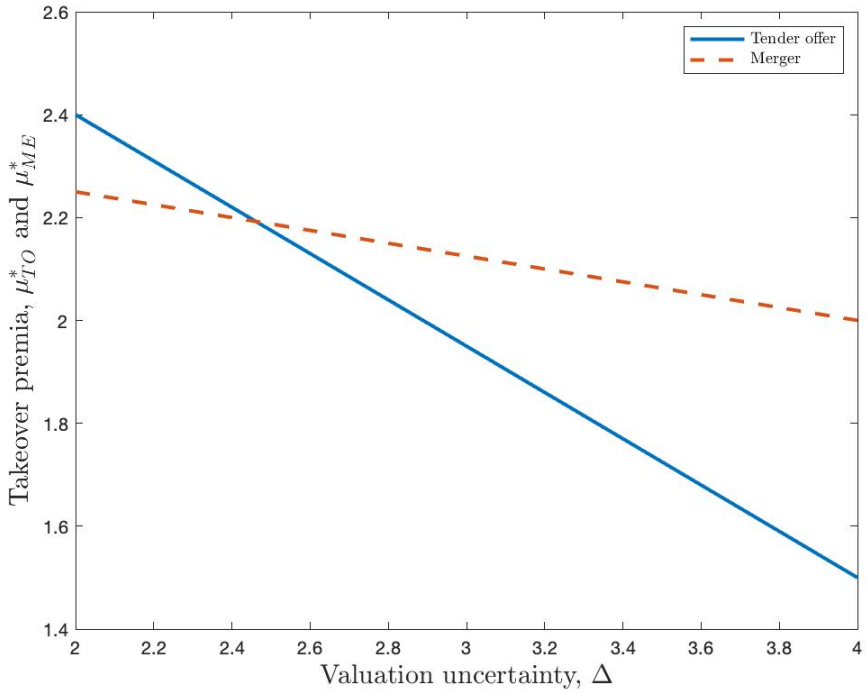

Figure 6: Illustration of Proposition 4

This figure presents the relation between the profit to controlling shareholder from freeze-out takeover and controlling owner's pre-takeover share of the firm, α. We use the following parameter values: $V_{CONT} = 2.5$, $V_H = 5$, $\Delta = 2$, $\tilde{\alpha}_{TO} = 0.75$, $\hat{\alpha}_{ME} = 0.5$.

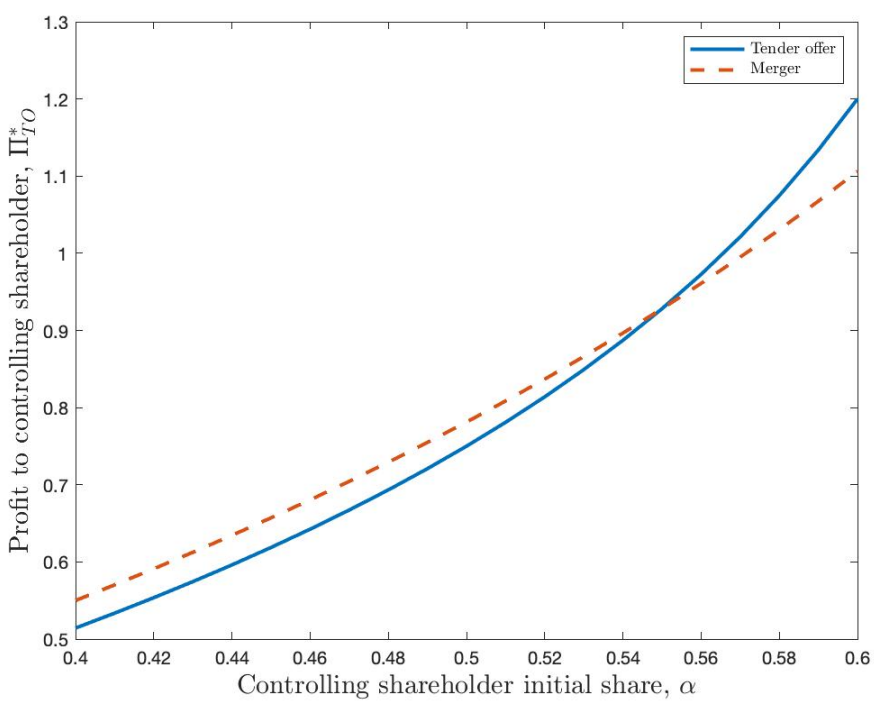

Table 1: Sample Descriptive Statistics

The table presents means, winsorized means (5% on each side), medians, and standard deviations of different characteristics of our 329 freeze-out offers, partitioned by offer mechanism. Offer and deal attributes are also reviewed. Total assets, leverage, and ROA are from firms' annual reports at the end of the fiscal year preceding the offer. To translate the figures into U.S. Dollars divide them by 4, given an average exchange rate of 3.97 New Israeli Shekels (NIS) per U.S. Dollar during the sample period (2000-2019). Control group holdings is the pre-offer proportion of firm's equity held by the control group. ROA is the ratio of net income to total assets. The 52-weeks High price premium equals (the stock highest price in the 52 weeks preceding the offer / stock price A-6) -1, where stock price A-6 is stock price six trading days before the offer announcement date. Pre-offer abnormal stock return is the mean net of market weekly return of the company's stock in weeks -55 through -6 relative to offer announcement, where the market is the Israeli small stock (Yeter) index return (almost all our sample stocks belong to this index). Offer premium is defined as (offer price/stock price A-6) -1. In case the offer price is revised before decision date, we use the revised offer price in the numerator of the premium calculation formula.

	Num. obs.	Mean	Winsorized mean [5,95]	Median	St. dev.
Company characteristics					
Control group holdings (as a proportion of equity)					
All offers	329	0.808	0.813	0.846	0.115
Tender offers	289	0.826	0.828	0.854	0.097
Mergers	40	0.682	0.702	0.704	0.150
Total assets (in thousands NIS)					
All offers	300	1,143,475	885,312	219,258	3,046,669
Tender offers	260	895,204	710,347	214,145	2,738,590
Mergers	40	2,757,237	2,022,580	305,528	4,274,888
ROA (Net profit/Total assets)					
All offers	298	-0.015	-0.013	0.025	0.193
Tender offers	259	-0.014	-0.012	0.025	0.189
Mergers	39	-0.023	-0.019	0.030	0.220
Pre-offer weekly abnormal stock return					
All offers	244	-0.0029	-0.0026	-0.0016	0.0105
Tender offers	211	-0.0030	-0.0026	-0.0018	0.0108
Mergers	33	-0.0023	-0.0020	-0.0014	0.0080

Table 1: Cont.

	Num. obs.	Mean	Winsorized mean [5,95]	Median	St. dev.
Company characteristics					
52 weeks High price premium (relative to stock price on day A-6)					
All offers	252	0.572	0.520	0.249	1.065
Tender offers	214	0.588	0.533	0.252	1.095
Mergers	38	0.484	0.444	0.240	0.887
Leverage (Debt/Total assets)					
All offers	299	0.684	0.670	0.655	0.408
Tender offers	260	0.689	0.678	0.658	0.387
Mergers	39	0.648	0.614	0.617	0.535
Offer and deal attributes					
Deal completion rate					
All offers	329	0.64		1	0.48
Tender offers	289	0.60		1	0.49
Mergers	40	0.93		1	0.27
Offered premium					
All offers	244	0.260	0.250	0.184	0. 279
Tender offers	211	0.240	0.234	0.182	0.248
Mergers	33	0.389	0.351	0.252	0.410
Accepted offers' premium					
All offers	152	0.275	0.264	0.202	0.287
Tender offers	120	0.242	0.237	0.190	0.235
Mergers	32	0.401	0.362	0.261	0.410

Table 2: Tests of the Model

The table reports tests of the model predictions (Testable predictions 1-3). Columns 1 and 2 test the mechanism choice, using Probit and OLS estimations, respectively. Columns 3 and 4 examine offer premium using OLS estimation in the tender offer and merger subsamples, respectively. Column 5 and 6 test offer completion likelihood using Probit and OLS estimations in the tender offer and merger subsamples, respectively. In Columns 1 and 2 the dependent variable equals 1 if the freeze-out deal is structured as a tender offer, and equals 0 if it is a merger offer. In Columns 3 and 4 the dependent variable is the freeze-out offer premium, defined as (offer price/stock price A-6) -1, where stock price A-6 is stock price six trading days before offer announcement date. In case the offer price is revised before decision date we use the revised offer price in the numerator. Winsorizing is performed on the overall raw premium data at the 5% and 95% levels. In Columns 5 and 6 the dependent variable equals 1 if the offer is completed, and equals 0 if it fails. The two explanatory variables are: Control group holdings defined as the controlling shareholders' pre-offer holdings (as a fraction of firm equity); and the 52 weeks High price premium defined as (52-weeks High price/stock price A-6)-1. Industry fixed effects are according to Tel Aviv Stock Exchange industry classification codes (9 industries). Robust standard errors, clustered at the firm level, are in parentheses, and ** and *** denote significance at the 5% and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	Mechanism choice		Offer premium		Completion likelihood	
	Probit	OLS	Tenders[a]	Mergers	Tenders (Probit)	Mergers[b] (OLS)
Control group holdings	4.40***	0.98***	-0.12	0.14	4.10***	0.50
	(1.21)	(0.24)	(0.20)	(0.34)	(1.22)	(0.48)
52 weeks High price premium			0.102***	0.038	-0.114	-0.011
			(0.017)	(0.056)	(0.108)	(0.030)
Calendar year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	178	329	209	33	201	38
Adjusted or Pseudo R^2 (%)	26.8	25.3	23.2	19.0	14.2	17.9

[a] Sample size decreases from 211 tender offers with reliable premium data (see Table 1) to 209 tender offers because for two tender offers (in year 2000, the beginning of our sample) we do not have 52 weeks of pre-offer stock data.

[b] Sample size decreases from 40 mergers (see Table 1) to 38 because in two cases the stock did not trade in the year before the offer (hence the 52 weeks High price premium is missing).

Table 3: Freeze-out Deal Litigation
The table summarizes the litigation evidence regarding completed freeze-out tender offers and reverse-triangular mergers, partitioned by structure (tenders vs. mergers).

	All deals	Mergers	Tender offers
Number of completed deals	210	37	173
Number of litigated deals	14	5	9
Litigation rate	6.7%	13.5%	5.2%
Number of successful litigations[a]	8	4	4

[a] Successful litigations are cases in which the plaintiffs won.

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