Early-Stage Company Valuation in New Zealand's Equity Crowdfunding Market

Abstract

Promoters of equity crowdfunding (ECF) companies can use disclosure to defend their company's valuation, reducing information asymmetry and reassuring investors. Promoters can name valuation approaches used and provide supporting information such as audited accounts, details of peer companies, or details of prior funding rounds. However, none of this is required in equity crowdfunding where only standard risk warnings are mandated, all other disclosure is discretionary.

This paper reviews ECF valuation disclosures and raises concerns about the level of detail provided and the exclusion of value-relevant factors including differential voting rights and non-financial sources of investment return. Around one-third of sample companies did not explain how the company was valued. Companies that do discuss valuation vary in the quality and quantity of disclosure provided. The most common valuation model used by ECF companies is a multiple of forecast revenue. Although this corresponds to recommended best-practice, in most cases only a single accounting multiple is used, and forecasts are based on limited financial history from unaudited accounts.

An alternative, qualitative, valuation model is developed so investors can compare new ECF offers with prior offers as a reasonableness test. Companies are assessed on; business development, customers, employees, funds sought, governance, and revenues to classify them as; proof-of-concept, seed, start-up, or early expansion. Benchmark values are reported for each.

Introduction

This article examines equity crowdfunding (ECF) company valuation disclosures and the provision of supporting information. The introduction of ECF to New Zealand in 2014 allowed small companies to sell shares to public investors without incurring disproportionate compliance costs. ECF offers differ from conventional initial public offers (IPOs), with much less institutional involvement from professional investors and financial market advisors. Retail investors in ECF face high risk of adverse selection and high levels of information asymmetry, Johan & Zhang (2020). Specific disclosures, such as how the company was valued, should reduce information asymmetry. Results show that many companies fail to disclose a valuation method, while many that do name a method offer little detail or supporting evidence. Investors rarely have sufficient information to replicate the valuation and determine whether the price is fair. A qualitative benchmarking model is developed to allow investors to compare future ECF offers to past offers.

ECF made it easier and more cost effective for small companies to raise equity finance by cutting disclosure and compliance costs. New Zealand's Financial Markets Conduct Act 2013 created an ECF exemption replacing the Securities Act 1978's requirement that companies undertaking public offers provide a prospectus and investment statement, Keeper (2017). The ECF provisions became effective April 2014, with the new law focusing on regulation through licencing the platforms promoting companies instead of directly regulating the actions of ECF companies, Kourabas & Ramsay (2018).

Early-stage companies are particularly hard to value due to their lack of operating history and significant uncertainty about their survival, see Blair (1990), Petersen et al. (2006), Damodaran (2010). There is no share market data for estimating the cost of capital and limited financial information makes it harder to estimate cash flows, Petersen et al. (2006). Valuation models rely on inputs which are either unavailable or hard to measure and require calibration against the known values of similar proxy companies. To minimise funding costs ECF companies are unlikely to hire professional valuers or undertake extensive research to support their valuation. Small company exemptions to financial disclosure rules mean ECF companies are unlikely to provide potential investors with audited accounts. Valuation disclosures are completely discretionary unless required by the crowdfunding platform.

Traditional mechanisms for reducing information asymmetry and adverse selection in IPOs are largely absent in equity crowdfunding. In New Zealand most ECF investment is retail, shares are not auctioned and there is no formal book-build process, unlike conventional IPO markets. Limited responsibility for due diligence and disclosing investment risks sits with each ECF platform, Keeper (2017). However, ECF platforms are not underwriters and should not be seen as performing an underwriter's due diligence role as platforms primarily assume the role of book-runner. Platforms do not accept any investment risk from underwriting the issue. At best ECF platforms provide weak certification of company quality and promoter credentials, investment risk is assumed by investors who are dependent on the ECF company providing meaningful disclosure and assure potential investors the company is viable with a reasonable valuation. Yung (2009) suggests venture capital investment and due diligence can signalling investment quality, but there is little venture capitalist investment through equity crowdfunding. Even when a crowdfunding campaign is successful there is no post-offer secondary market trading to reveal mispricing.

Examination of New Zealand ECF disclosures reveal widespread variation in valuation approaches. Some companies do not explain how their valuation was determined, at best broadly discussing their business and growth potential, which is hard for investors to verify Johan & Zhang (2020). When the valuation approach is disclosed market models are most common with the most frequently used model a multiple of forecast revenues. Less frequently used approaches include income models with

discounted cash flows, basing values on establishment costs, and values derived from achieving development milestones. Few companies use robustness tests such as comparing the results of multiple valuation approaches or applying multiple valuation models within a given approach.

There is also widespread variation in the quantity and quality of supporting evidence provided. Few companies provide audited accounts. Some companies have undertaken prior funding rounds, which provides a valuation benchmark, but they rarely mention when or at what share price that funding took place, or how the company has subsequently changed. Some companies say they used an external valuer or advice, but only one sample company provided investors with a copy of their valuation report. The most common supporting evidence was naming the peer companies used to establish valuation multiples.

Inspection of ECF documentation identified three common value-relevant features ignored in the discussion of valuation. Firstly, New Zealand ECF companies often sell non-voting shares which should be less valuable as they reduce control rights. Secondly, non-financial benefits are often offered as shareholder perquisites, but the value of the benefits is not explicitly considered in company value. Finally, some ECF companies are social enterprises, again raising the issue of non-financial benefits for investors, albeit with a possible reduction in financial returns.

Quality valuation disclosures can reduce information asymmetry, which should improve investment in equity crowdfunding. However, many companies choose not to provide information on how the company was valued or provide information with little supporting evidence. Potential shareholders are rarely provided with sufficient information to replicate or evaluate a company's valuation as part of their investment decision making.

Company Valuation

The International Valuation Standards Council (IVSC) describes three main approaches to valuation: market, income, and cost. Market[1] approaches estimate value by comparing an asset with similar assets, for which recent transaction data is available, using a valuation multiple. Income approaches estimate value from the asset's generation of income, cash flow, or other sources of value to investors. Cost approaches measure the cost of creating an asset of equal utility. Within each approach are specific valuation methods, models, and evidence that valuers should seek to support the valuation, IVSC (2022).

[1] The use of market valuation multiples is also called: comparative company analysis, guideline company analysis, relative valuation, direct comparison valuation, and the twin company approach.

Market approaches are more subjective than income approaches and make greater use of qualitative information. While computationally simple, correct application of market approaches is complex, Holthausen & Zmijewski (2012). Selection of valid comparable transactions should include comparison of firms' qualitative characteristics and adjustments for any material differences in their geographic locations, profitability, growth, control characteristics, and ownership. In contrast income approaches concentrate on the fundamental characteristics of the subject company being valued, IVSC (2022).

Market approaches are preferred because they use recent transaction data, provided suitable data is available and the valuation performed correctly, IVSC (2016). Income approaches are more quantitative and can appear more objective, however they still require subjective forecasting of future income and the use of market data from peer companies when calculating discount rates. Cost approaches are only recommended when market and income approaches are not viable.

Combining multiple approaches or methods reinforces the valuation when different approaches produce similar results. However, it is not necessary to use multiple approaches when one approach is clearly appropriate and working. If different approaches produce different valuations the valuer should investigate the reasons for the differences so the best valuation can be selected, IVSC (2022).

Market Approaches

Comparable company valuation uses market price or valuation multiples from similar companies to infer the value of the subject company. The two main versions are the guideline transactions method and the guideline publicly-traded method. The guideline transactions method uses market values obtained from one-off deals where the value of a comparable private company is observed from venture capital, or similar, investment. The guideline publicly-traded method uses price information from publicly-traded companies similar to the subject company being valued, IVSC (2022). Market approaches standardise values by scaling them relative to a common variable such as revenues or earnings, Damodaran (2005).

With market approaches it is important to undertake a comparative analysis of the similarities and differences between the comparable assets and the subject asset, and make any necessary adjustments for differences, see Damodaran (2005) and Holthausen & Zmijewski (2012). Accounting differences can be caused by capital expenditure, temporary changes to payables or receivables, and temporary accruals. However, although extra detail generally improves valuation it must be available and accessible, Anesten et al. (2020). When comparable companies with guideline transactions have used equity crowdfunding there will not be sufficient detail in their disclosures to identify where adjustments are needed.

There is little consensus on the best market multiple. Liu et al. (2002) found models using forward earnings describe actual prices well, while pricing errors were stronger for historical measures of earnings and cash flow and there were large errors when models used historical sales. These results held across multiple industries, with no indication that specific multiples were suited to specific industries. Similarly Yoo (2006) found models performed better when combining multiples using historical measures, but there was no significant improvement from combining a forward earnings multiple with various historical measures when compared to using forward earnings alone.

Selection of Peer Companies

Market approaches require the selection of comparison, or peer, companies which will typically be in the same industry to proxy for risk and financial characteristics. Holthausen & Zmijewski (2012) recommend financial data should be adjusted for differences in value drivers such as: growth, capital expenditure, risk, operating characteristics and working capital. It may also be useful to adjust for differences in leverage and size. Non-financial factors, such as the probability of survival, are hard to control for as they may not affect all companies in the same industry similarly. Non-financial factors require more in-depth qualitative analysis to evaluate.

There are trade-offs in selecting the sample of peer companies as a larger sample is less likely to be biased but will contain a smaller proportion of closely comparable companies. Eaton et al. (2022) found when market valuation is used by advisors in IPOs and mergers an average of eight peer companies is used. Cooper & Lambertides (2023) support the use of multiple peers but found only minor improvements when the number of peers increased from five to ten, and very little improvement when using more than ten peer companies.

Income Approaches

Income approaches estimate value from the asset's generation of income, cash flow, or other sources of value to investors. Applying income approaches to early-stage companies is challenging. Cash flows from exiting assets are hard to value as revenues are small or non-existent, and start-up expenses can be irrelevant for cash flow forecasting as they differ from on-going operating expenses, Damodaran (2010). Estimating earnings for new businesses is harder as less data is available and reduced reporting obligations mean accounting data is less detailed or lower quality, Blair (1990).

Early-stage companies aim for strong growth, which complicates earnings forecasts. Estimating the value added by growth assets is complicated, firstly by the need to separate expenses supporting current operations from expenses supporting growth, secondly by the lack of a track record on the quality of growth investments, and finally from a lack of suitable data to estimate terminal value, Damodaran (2010). The role of terminal value is also subject to debate in early-stage valuation.

Sharma (2015) suggests terminal values should be ignored for early-stage companies due to the high risk of corporate failure. However, Bancel et al. (2021) identify terminal value as the main component of early-stage company value as these companies are often loss making or have little positive net cash flow during the near-term forecasting period. Holthausen & Zmijewski (2012) argue that although market methods are often used for calculating terminal value, it may be necessary to use different multiples to those used for near-term valuation to reflect expected changes to the subject company.

Valuation is ultimately quantitative, but analysis of qualitative information is necessary to support numerical measures. Damodaran (2010) breaks valuation into four parts: First, identify the cash flows from exiting assets, second estimate the value added by growth assets, third estimate the risk of cash flows from both existing and growth assets, and finally forecast the potential roadblocks and time until the firm matures. The first three steps are mostly quantitative, but are informed by qualitative judgements, the final step requires qualitative assessment. Penman (2006) warned against overdependence on quantitative methods as combining precise mathematical formulae with imprecise inputs makes valuations appear more precise than justified. Similarly, Bancel et al. (2021) note that when an inappropriate valuation model is used, the use of financial terminology can signal management fluency in the language of finance and create a false impression the valuation is fair.

The standard approach to testing valuation models is to compare estimated values to public companies' market values. Fernández (2007) argued that income approaches will provide consistent valuations when consistent inputs are used in the models, but equations need to be adjusted when the market value and book value of debt differs to maintain consistent results. Variation also arises when different theories are applied to the valuation of tax shields. Bailey et al. (2008) compared income models, finding dividend and residual income models could produce valuations comparable to actual market values while free cash flow models produced poor results.

Damodaran (2010) argued that market approaches using multiples provide a partial solution to problems raised with income approaches. The range of multiples available, such as earnings, book value, revenue, and others, allows companies with no dividends and negative cash flows to be valued. The data required is simpler and more likely to be available for early-stage companies, but in return more assumptions must be met for valuations to be valid.

Discounted Dividend Valuation

Discounted dividend models value a company's equity as the present value of all future cash flows, where cash flows are represented by dividend payments and a terminal dividend, Miller & Modigliani (1961). The simplest model assumes a fixed dividend valued as a perpetuity, but for most companies this is not realistic. The Gordon (1962) dividend growth model uses a fixed growth rate to value equity

as a growing perpetuity. More complex models allow changing growth rates to reflect the company life cycle.

A problem with traditional dividend discounting models is that they use a narrow view of dividends that does not include share repurchases or other forms of distribution, Jiang & Lee (2005). Dividend models are also hard to apply to the valuation of new businesses. Early-stage companies either do not pay dividends or there is a controlling ownership stake which can determine dividend policy and undermine the assumption that dividend policy is used to maximise the wealth of all shareholders, Blair (1990).

Ohlson & Gao (2006) and Ohlson & Juettner-Nauroth (2005) address the limitations of classical dividend growth valuation models by developing a version allowing changes in dividend policy and periods of zero-dividend payment. They reduce the classical dividend growth model to a special case of their extended dividend valuation model. Using a broader definition of dividends brings their model closer to free cash flow models.

Free Cash Flow Valuation

Miller & Modigliani (1961) also considered models estimating potential dividends, from earnings-based estimates of cash flows, to avoid unrealistic assumptions around regular dividend payments. Free cash flow models replace dividends with a measure of free cash flow to equity, or free cash flow to the firm. Detailed cash flows are estimated for a finite period to a terminal year, and the terminal value is added by discounting estimated cash flow beyond the terminal year as a growing perpetuity. It is important to ensure consistency between inputs, for example the growth rate and dividend size must reflect the same reinvestment level to produce valid valuations.

Both dividend and free cash flow models are highly sensitive to estimation error, particularly with respect to estimation of the growth factor and its effect on terminal value, Penman (2006). When dividend or free cash flow valuation formulae include a growing perpetuity, the calculation is sensitive to changes in the discount and growth rates. If the discount rate (r) and growth rate (g) are similar and $r-g$ is the divisor, when $r-g$ approaches zero the slightest change in either discount or growth rate has a disproportionate effect on the valuation.

Residual Income Valuation

The residual income model (RIM) was developed to reduce valuation sensitivity to estimation error. RIM attributes most of a company's value to the book value of equity, representing the present value of normal income. The remaining value, arising from a company's ability to generate abnormal income, is still estimated using discounted cash flow models. This produces a more stable valuation as the

major component of equity value comes from the audited financial statements instead of a forecast of future events, Penman (2006).

Despite the intuitive appeal of RIM providing more stable valuations, it does not work well. Jiang & Lee (2005) compared the residual income model with dividend discounting models and found RIM did not work as well with high growth, low book-to-price, and low earnings-to-price firms. Ohlson & Johannesson (2016) argue that RIM, while having some intuitive appeal, lacks empirical support and is rarely used in practice.

Real Option Valuation

Real options approaches to valuation are based on the idea that a company's value is the sum of net present values (NPVs) for its current and future projects. Therefore, at least some of the value comes from the value of its options for future investment, Myers (1977). Incorporating real option value also corrects for NPV's failure to incorporate managers' ability to reverse, delay, or expand on an investment, Dixit & Pindyck (1995). Real options are more commonly used for project evaluation but can be extended to provide an alternative approach to company valuation, particularly for high growth companies, Buckley et al. (2002).

Real options models expand on the Black & Scholes (1973) model for financial options by drawing parallels between its parameters and real world value drivers. Buckley et al. (2002) aligns the exercise price with expenditure required to acquire an asset, stock price with the present value of assets, time with ability to defer investment, variance with the risk of the underlying assets and operational flexibility. However, Bancel et al. (2021) argue that these parameters are either difficult or impossible to measure for early-stage companies. Even when the parameters can be estimated, they can change quickly with early-stage companies, Finnerty (2016).

Discount Rate Estimation

Income models require an estimated discount rate. To value equity the appropriate rate is the cost of equity, usually determined using the capital asset pricing model (CAPM), or the whole firm can be valued using the weighted average cost of capital (WACC). Estimating the cost of capital from market data first requires an assumption that market values are accurate, but market values are unlikely to be accurate unless the correct cost of capital was used, Krishna et al. (2010).

It is common practice to use proxy companies to estimate beta for the cost of equity when there is no market data for the subject company. Adjustments are required when data from proxy companies is used but the subject company has different voting rights or significant differences in capital structure, Blair (1990). However, Petersen et al. (2006) found few valuers make the recommended adjustments for differences in leverage. Bancel et al. (2021) also argue that it is hard to find suitable proxies for

early-stage companies as they are highly innovative and unique. Valuation of early-stage companies should reflect the rights attached to shares, so differences between founder and investor shares imply different costs of equity, Damodaran (2010), and care should be taken when selecting proxies to minimise or adjust for differences.

Cost Approaches

Simple cost-based approaches to valuation consider either the capital costs incurred creating the business, or the replacement costs of business assets. Cost approaches are based on the idea that a buyer would not pay more for an asset that it would cost them to create the asset themselves. The current reproduction or replacement cost of an asset is reduced to reflect deterioration or obsolescence. Cost approaches are better suited to valuing individual assets than whole companies, IVSC (2022), and should not be used when income or market approaches can be used. Costs included vary from case to case but can include both direct and indirect costs, financing costs and tax, and a supplier's profit margins.

There are three main methods within the cost approach: replacement cost, reproduction cost, and summation. Replacement cost is what someone would pay to replicate the utility an asset provides, with a modern equivalent asset, adjusted for depreciation or obsolescence of the actual asset. Reproduction cost is similar but considers the creation of a replica asset instead of a modern equivalent asset. The summation method is typically used by investment companies where the value of the company depends on the value of its constituent investments. With the summation method each component value should be determined using appropriate valuation models. Intangible assets do not have a physical form so reproduction is not possible, but replacement cost can be used. IVSC (2022).

Qualitative Approaches

While the IVSC framework incorporates qualitative information in market and income approaches it does not include full qualitative valuation approaches. Qualitative valuation methods include the Berkus method, the scorecard method and risk factor summation, Cremades (2021). These methods value a company based on its stage of development and milestones achieved. The Berkus and scorecard methods parallel market approaches by referencing observed transaction values when other early-stage companies receive venture capital funding or are involved in a merger, acquisition, or trade sale.

The Berkus method, as described in Amis & Stevenson (2001), values early-stage companies based on meeting a set of qualitative targets. Specifically, for an early-stage company a sound business idea was worth up to US$1 million, a prototype added over US$1 million, a quality management team adds

US$1-2 million, a quality board adds up to US$1 million, and a product roll-out or sales adds over US$1 million. These values can be adjusted for inflation, local market conditions and converted into other currencies. This method is subjective and requires expert judgement from investors.

The scorecard method uses the known values of comparable companies, at the same stage and in the same industry and region, as the basis for valuing early-stage companies. For example, if a company is identical to another recently valued at $10 million, the subject company should also be worth around $10 million. This base value is then adjusted using factors such as; the strength of management, the size of the opportunity, the company's product or technology offering, the competitive environment, marketing and sales, the need for additional capital, and any other relevant factors the valuer chooses, Cremades (2021).

Risk factor summation is similar to the scorecard method but uses 12 risk factors. The risk factors are: potential exit, reputation, international, litigation, technology, competition, funding, sales and marketing, manufacturing, legislation, stage of business, and management, see Cremades (2021). The base value is determined using the same approach as the scorecard method, then a set monetary amount is added or subtracted for each point on a five-point scale from very-high-risk to very-low-risk, Babu et al. (2023).

Qualitative methods can also be used to estimate the discount rate for DCF valuation. Festel et al. (2013) discusses a qualitative approach to estimating a beta coefficient, using five factors: technology, products, implementation, organisation, finances. These factors are like those used in the scorecard method. Each factor has four subcategories, so overall 20 qualitative aspects are evaluated to estimate a beta coefficient.

Early-Stage Companies in New Zealand

Qualitative descriptions of early-stage companies used by New Zealand Growth Capital Partners (NZGCP)[2] are similar to development stages used in Berkus valuation. NZGCP classifies early-stage businesses across four phases: proof-of-concept, seed, start-up, and early-expansion. Funding for proof-of-concept round size is typically less than NZD$300,000 while seed companies seek up to $1 million, start-ups seek up to $2 million, and an early-expansion round size is typically between $2 million and $10 million, NZVIF (2016).

Proof-of-concept companies have yet to form a business or establish viability. They typically seek investment to build an early prototype product. Companies at this stage may still have a solo founder and few or no employees; are pre-revenue; and are unlikely to have a board in place.

[2] Previously named the New Zealand Venture Investment Fund (NZVIF).

Seed companies seek investment to enable development, validate IP, or preparation a product or service to the point where it is feasible to start operations. Companies at this stage are likely to still be pre-revenue or only have limited revenues from trial orders, cashflow is negative, they have no customers or a very small customer base, staff are mainly founders and some part-time employees, they are beginning to form their board of directors.

Start-up companies seek investment to enable actual business operations to get underway. This can include further development of product and services, initial production, hiring management, undertaking marketing, and initial international growth. Companies at this stage have revenues less than $3 million, negative cash-flow, an incomplete senior management team, fewer than 20 full time employees, and a board formed from founders and early investors.

Early-expansion companies seek capital to scale up production facilities, expand international sales, and develop their marketing. The company may still be cash-flow negative, but will have established its senior management team, have more than 20 full-time employees, and a growing customer base.

Other Factors Affecting Company Value

A range of other factors should, ideally, be included in the valuation of early-stage companies but are difficult to incorporate in practice. The risk of early investors' rights being diluted in later investment rounds reduces the value of early investment rounds, Damodaran (2010). A marketability discount may need estimating when there is no secondary market, Blair (1990). Intangible assets are an important part of technology and biotech firm valuation, but are difficult to quantify with non-financial factors the major drivers of value, Guo et al. (2005). Networks and alliances are an important source of value in modern business, Guo et al. (2005), but are not incorporated into standard valuation models.

Valuation in Practice

Damodaran (2010) identified several problems with venture capital valuations concentrating on top-line revenue or bottom-line profits, ignoring cost structure in-between. Forecasts for discounted cash-flow models were only short term and used a range of ad hoc adjustments, such as using a higher discount rate to proxy for survival risk and using rules of thumb to adjust for different control rights. Damodaran suggested practice would be improved by considering; operating expenses, market size and potential market share, and the amount of reinvestment used to generate growth.

Valuation analysis would be improved by greater internal consistency, considering growth options, using sector averages for the cost of capital, and using statistical approaches or simulations for survival rates. Rosner (2000) examined the implied growth rates of large tech companies around the 2000

tech-market crash and found the prevailing high valuations could only justified by high and sustained growth rates, for which there was little historical precedent.

Bancel & Mittoo (2014) found discounted cash flow methods were preferred by valuation professionals. Free-cash-flow-to-the-firm (FCFF), free-cash-flow-to-equity (FCFE) and dividend discounting were all used. With comparable company valuation the most common multiples are firm-value-to-EBITDA and price-to-earnings. Price-to-book, firm-value-to-EBIT and firm-value-to-sales are also used. Real options are not commonly used in practice.

Gaps between actual practice are theoretical best practice are due to impractical data requirements. The high sensitivity many models have to their inputs means most professional valuers use multiple methods, Bancel & Mittoo (2014). Some venture capital valuations use abnormally high discount rates for early-stage companies to adjust for uncertainty, instead of using a normal discount rate and adjusting the cash flows for uncertainty, Bancel et al. (2021).

Data and Methodology

Content analysis of hand-gathered data from ECF company disclosures provided the primary data for this research. Source data includes both website content on crowdfunding platforms and downloaded disclosure documents when provided. All ECF companies provide an online overview of their operations, plans and financial requirements through the host crowdfunding platform. Most companies also provide a downloadable information memorandum document. There are no formal disclosure rules covering the content of these disclosures beyond standard investment risk warnings. There is no requirement for financial accounts to be audited. The content analysis was directed as coding was based on prior literature, and summative as counts of valuation models were collated.

There were 132 ECF campaigns through licenced New Zealand ECF platforms between August 2014 and December 2019. Campaigns are excluded from the sample if the company did not have its primary registration in New Zealand (11 companies), or if the campaign was not the first time the company had used equity crowdfunding (12 companies). Three ECF campaigns were excluded because their structure required a highly customised approach to valuation: one was a special purpose vehicle used to part-finance a movie, two were investment funds where valuation required assessment of multiple portfolio companies. Six companies were excluded because they issued preference shares. The remaining sample contains 100 companies, of which 65 were successfully funded.

Observations About Sample Companies

During data collection several observations were made about sample companies having value relevant features which were not explicitly incorporated into their valuation. These include modifications to

voting rights, blockholder control, offers of shareholder rewards or perquisites, and social enterprise business models.

Only thirty of the sample companies offered direct ownership of ordinary shares with full voting rights. Most other companies cited avoidance of the Takeovers Code as their main reason for offering non-voting shares or using an indirect, nominee, structure. Nominee companies concentrate external investor voting rights and can offset founders' retaining a large holding, Coakley et al. (2021). There were also individual cases with modified voting rights. For example, OCHO Limited offered direct ownership of voting shares with voting right limitations to prevent any single investor gaining effective control. Control rights were also compromised by the large, controlling, holdings typically retained by founders.

Perquisites, offers of non-financial shareholder benefits, are common for ECF companies in hospitality and retail focussed business. Karpoff et al. (2021) found similar offers in public companies are associated with positive announcement returns, greater investment by retail investors, lower illiquidity for exchange traded securities, and lower cost of equity. These non-cash distributions have greater value to retail than institutional investors.

Many of the sample companies are social enterprises or attempting to develop environmentally sustainable products. However, there is no explicit consideration of social or environmental value in standard financial valuation models. At best, if a social enterprise uses valuation multiples with other social enterprises as comparable companies, then an implicit social value premium or discount may be incorporated into the multiple.

Results and Analysis

Company counts for each valuation approach and supporting evidence are provided in the following tables. Initially companies are sorted by crowdfunding platform to identify whether practices are influenced by platform or peer group. Counts are also sorted by development stage to identify how that affects approaches and methods used.

Valuation approaches for each company were identified from crowdfunding disclosures, see Table 1. For the initial results counts are grouped by platform to identify relationships between supporting platforms and valuation approach. Most companies that disclosed an approach used a single approach.

Table 1 Valuation Approaches and Host Platform

Crowdfunding Platform	No Approach Disclosed	Costs	Milestones	Berkus	Income Approaches	Market Approaches	Platform Totals
Alphacrowd	5	-	-	-	-	1	6
Collinson	-	1	-	1	-	1	2
Crowdcube / Crowdsphere	4	-	-	-	1	1	5
Equitise	11	-	-	-	1	2	14
My Angel Investment	-	-	-	-	1	-	1
PledgeMe	6	9	2	2	6	31	50
Snowball Effect	6	2	6	-	4	11	22
Approach Totals	32	12	8	3	13	47	

Valuation approach totals do not add to 100 as some companies used more than one approach.

Seven licenced platforms promoted equity crowdfunding campaigns over the sample period. The main platforms are PledgeMe, The Snowball Effect, and Equitise. The distribution of valuation approaches shows significant variation across platforms X^2 (30, N = 115) = 76.20, p = 0.0000. Companies using PledgeMe and The Snowball Effect were much more likely to report their valuation approach and also more likely to use market methods. Companies not providing an explaining for their valuation are concentrated on Equitise and the smaller platforms.

Companies may supply other supporting evidence, use multiple approaches, or use multiple methods within an approach to support their valuation, see Table 2. The most common supporting detail provided was to name peer companies when using market approaches. Half the sample did not provide any supporting evidence. Some companies made claims in support of their valuation without naming the specific approach used. For example, more Equitise companies stated they had prior funding rounds or used an independent valuer than named a valuation approach. It is rare that these supporting statements are include detailed evidence, so investors need to decide whether to accept these claims on faith. For example, most companies stating they used an independent valuer did not provide the valuation report, although some stated the valuation approaches used.

Table 2 Supporting Evidence and use of Multiple Methods

Crowdfunding Platform	No Supporting Evidence	Multiple Approaches	Multiple Multiples	Named Peers	Prior Funding Round	Independent Valuer
Alphacrowd	6	-	-	-	-	-
Collinson	-	1	-	1	-	-
Crowdcube / Crowdsphere	3	1	-	1	1	-
Equitise	7	-	-	-	3	4
My Angel Investment	1	-	-	-	-	-
PledgeMe	30	6	4	11	2	3
Snowball Effect	3	5	1	7	9	4
Evidence Totals	50	13	5	20	15	11

Totals do not add to 100 as some companies provide more than one type of supporting evidence.

While many companies failed to provide supporting evidence, for those that did the most common support was naming the peer companies used to calculate a multiple. Companies were more likely to disclose the use of multiple valuation approaches than to disclose the use of multiple valuation multiples. Snowball Effect companies were more likely to have undergone a prior external funding round, which is consistent with Snowball Effect supported larger, more developed, companies.

A Qualitative Valuation Benchmark

To examine differences across each development stage each company was classified as a proof-of-concept, seed, start-up, or early expansion company. Classification was based on the median score of each company's match to the NZGCP descriptors for revenue, business development, governance, employees, and customers. There are similar numbers of seed, startup and early expansion companies, but fewer proof-of-concept.

Table 3 Valuation Approach and Development Stage

Valuation Stage	No Method Disclosed	Costs	Milestones	Berkus	Income Approaches	Market Approaches	Stage Totals
Proof-of-Concept	5	4	1	1	-	3	14
Seed	13	3	1	1	5	14	37
Startup	8	3	2	1	4	10	28
Early Expansion	6	2	4	-	4	20	36
Approach Totals	32	12	8	3	13	47	

Totals do not add to 100 as some companies used more than one approach.

Few proof-of-concept companies use market methods, which is expected as they are pre-revenue so have little data for financial forecasts. Otherwise, there is little evidence of more developed companies using stronger valuation methods, see Table 3, or that less developed companies are less likely to disclose a valuation approach X^2 (15, N = 115) = 17.49, p = 0.2903. When not using market methods more developed companies are more likely to base their valuation on milestones achieved than use income methods, consistent with having more milestones to report.

There is more evidence of a relationship between development stage and companies providing supporting evidence for their valuation, see Table 4, X^2 (15, N = 114) = 30.80, p = 0.0094. More developed companies are more likely to have prior funding rounds, to name peer companies, use more than one valuation multiple, and use more than one valuation approach. Independent valuers were rarely used but were used by companies across all development stages.

Table 4 Supporting Evidence and use of Multiple Methods by Development Stage

Supporting Evidence and use of Multiple Methods	No Supporting Evidence	Multiple Approaches	Multiple Multiples	Named Peers	Prior Funding Round	Independent Valuer
Proof-of-Concept	10	1	-	-	-	2
Seed	22	3	1	2	4	2
Startup	11	3	-	6	4	3
Early Expansion	7	6	4	12	7	4
Evidence Totals	50	13	5	20	15	11

Totals do not add to 100 as some companies provided more than one form of supporting evidence.

Proof-of-concept companies are the least developed, and therefore have the weakest basis for their valuation, their most common valuation approach is to reference the costs incurred in getting the company to its current position. Three proof-of-concept companies argued for a quantitative valuation using a multiple of forecast accounting values, but none named a peer company in support of their chosen multiple.

All proof-of-concept, seed, and startup companies using market models used accounting forecasts. Most early-expansion companies used forecast accounting values, but seven used actual values. As early-expansion companies are the most developed, they are more likely to have actual accounting values that could be used.

Table 1 showed the most common approach is market methods, although used almost exclusively by PledgeMe and Snowball Effect companies. Specific multiples are presented in Table 5, sorted by development stage.

Table 5 Valuation Multiple Used and Development Stage

	Proof-of-Concept	Seed	Startup	Early Expansion	Total
Revenue / Gross Merchandise Value	-	8	8	17	33
EBIT / EBITDA	2	7	2	7	18
Net Profit / NOPAT	1	-	-	3	4

* Five companies, one seed and four early expansion, used more than one valuation multiple.

Revenue multiples are the most common, used in sixty percent of cases. Revenue multiples are not used by any proof-of-concept companies which is expected as they are pre-revenue and forecasting revenues is not appropriate. However, some proof-of-concept companies are willing to base their valuation on forecast earnings or profits. Revenue multiples do not incorporate expenses, but for early-stage companies the use of earnings or profit multiples may not be viable as their earnings and profits may be negative. Earnings multiples, EBIT and EBITDA, are the second most common used, few companies used profit multiples.

The sample companies did not mention any use of residual income or real options models, or of any qualitative model other than the Berkus model. Residual income models would not be appropriate for many early-stage companies as they are pre-income. The focus on growth opportunities in real options models could suit early-stage companies, but is complex and would need to be supported by valuation professionals.

Qualitative Benchmarking

The pre-money valuations of successful campaigns at each development stage are examined to support reasonableness testing of future offers. Investors can use the NZGCP qualitative descriptions to determine the development stage of each new offer and compare the quoted valuation and fundraising target with those of sample companies. All values are inflation adjusted to December 2022 dollars.

Table 6 Values of Successful Equity Crowdfunding Companies

	Mean	Standard Deviation	Sample Size
Proof-of-Concept	$ 1,465,626	$ 1,576,948	7
Seed	$ 5,380,543	$ 6,567,321	17
Startup	$ 5,705,970	$ 3,684,379	17
Early-Expansion	$ 11,820,032	$ 11,176,062	24
Comparison of Mean Values, Two-Sample t-Test Assuming Unequal Variances			
Proof-of-Concept v Seed			
	t Stat	-2.3020	
	P(T<=t) one-tail	*0.0161*	
Seed v Startup			
	t Stat	-0.1782	
	P(T<=t) one-tail	*0.4300*	
Startup v Early-Expansion			
	t Stat	-2.4955	
	P(T<=t) one-tail	*0.0092*	

Values inflation adjusted to December 2022

As expected seed companies are more valuable than proof-of-concept, and early-expansion companies more valuable than startups, see Table 6. However, there is no significant difference in the values of seed companies and startups. It should be noted that standard deviations are large.

Table 7 Values of Successful Equity Crowdfunding Companies, by Quartile

Quartile:	Minimum	Q1	Median	Q3	Maximum
Proof-of-Concept	$ 165,573	$ 589,599	$ 1,172,043	$ 1,466,316	$ 4,809,937
Seed	$ 785,692	$ 1,499,316	$ 2,895,009	$ 5,418,476	$ 27,008,283
Startup	$ 67,653	$ 3,593,902	$ 5,198,673	$ 9,402,932	$ 12,342,545
Early-Expansion	$ 245,685	$ 4,639,436	$ 9,554,773	$ 14,580,327	$ 49,312,629

Values inflation adjusted to December 2022

Table 7 provides indicative values at each development stage. The minimum and maximums include outliers, so investors should treat the range between Q1 and Q3 as indicative of reasonable company value for the given development stage. Although the means in Table 6 indicate no difference between seed companies and startups this is affected by highly skewed data in the seed company sample. Quartile values in Table 7 are more in line with expectations of startups being more valuable than seed companies.

Summary

One third of New Zealand companies using equity crowdfunding fail to explain how the company was valued. Some others only state the method used without providing any supporting evidence or detail. As crowdfunding investors are mostly retail, the absence of institutional investment combined with limited accounting and valuation data increases the risk of under-informed investment. While ECF companies are relatively small, compared with exchange listed companies, they often have complex features such as differential voting rights, or combine business with social or environmental objectives, which requires expert valuation.

Given the limited information available for early-stage companies, those that do provide quantitative support for their company's value most often use accounting multiples, but often just a single multiple combined with forecast revenues. Best-case examples of using more than one valuation multiple and naming the peer companies are mainly more established early-expansion companies.

The most common qualitative approach to valuation used by ECF companies is to refer to costs incurred. Either the cost of establishing the business, the cost of assets in place, or replacement costs. This is more common with companies at the proof-of-concept stage, but also used by more developed companies when more sophisticated methods could be used. The risk with an appeal to costs is that these are usually sunk costs and do not necessarily reflect the value of the business going forward. The other main qualitative approach is to broadly consider milestones or the more formal Berkus method. Again, these mainly consider what the company has done before and not what the company will do to justify its valuation in the future.

While this research is mostly descriptive, it identifies a range of concerns about the information provided by ECF companies and their valuation. Variation in voting rights is common with the majority of ECF companies selling non-voting shares or holding ECF investor shares in a nominee company. Shareholder perquisites are commonly offered by ECF companies with a hospitality or retail focus, which can be used by investors to offset the risk of uncertain future dividends or capital gains. Many ECF companies have social or environmental objectives, raising the possibility that investors are

interested in non-financial returns. All these factors are value relevant, but not explicitly considered in valuation disclosures or models.

Given the problems of obtaining suitable data for valuing early stage companies, qualitative methods provide a practical alternative. Indicative values are provided from successful ECF campaigns at each development stage for investors to evaluate the reasonableness of stated company values.

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