# Innovation, Imitation and Regulation in Finance: The Evolution of Special Purpose Acquisition Corporations

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**ABSTRACT**

Special Purpose Acquisition Corporations are shell companies created to undertake a business combination with an operating business. As they initially have no operations they appear very similar to each other, but closer inspection reveals a number of variations in design. This paper uses cluster analysis to examine similarities and differences between companies, showing how changes to acquisition company structure are either copied or abandoned. The analysis reveals an on-going evolutionary process which sometimes produces groups of companies sharing common features and sometimes great variety in corporate form. Although innovative changes became common after the financial crisis, by the end of the sample period there is evidence that many acquisition companies were coalescing into two groups with common features within each group, but notable differences between the groups. A key feature of acquisition companies is their avoidance of prescriptive regulatory control, which enables change provided self-regulation gives sufficient protection to stockholders.

Keywords: IPO, Reverse Merger, Innovation, SPAC.

## 1. INTRODUCTION

Designing financial contracts involves trade-offs between innovation, imitation and regulation. Innovation creates the possibility of capturing market share through first-mover advantages, but at the risk of failing to achieve market acceptance of the new design. Financial innovation also occurs in a regulatory environment which limits what is allowed. Imitation of past successes, on the other hand, reduces the risk of market rejection provided no other issuer innovates a better design. The combination of high imitation and strict regulation leads to path dependence and equilibrium around a small number of acceptable designs. In contrast high innovation and low regulation weakens path dependence and a wide range of competing designs result.

When novel innovations have clear benefits we should expect them to be imitated, and poor innovations avoided. Through a learning process financial contracts will gradually evolve into more efficient and beneficial forms, provided the costs and benefits of each adaptation can clearly be identified. The world, however, is a complex place with many


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simultaneous changes occurring which makes it hard to attribute costs and benefits to specific innovations.

Furthermore, many novel innovations will appear to be of no consequence. Such innovations emerge and are, seemingly randomly, copied because they appear to be neither good nor bad. If copied innovations lead to increased variation in the corporate form. Evolution shows that variation can be beneficial in the long run because in a changing environment features that were once without consequence can become important for survival. Similarly we may see that greater variation in the corporate form helps ensure at least one version of the corporation survive a changing environment brought on by significant events such as a financial crisis or market crash.

Usually innovation and imitation of the corporate form is difficult to see through the fog of everyday differences existing between operational firms. Here, however innovation and imitation in the Special Purpose Acquisition Corporation (SPAC) structure is clearly visible. SPACs are shell corporations created to effect a merger, asset acquisition, or similar business combination to convert into an operating business. Initially each new SPAC was almost completely identical to those that had come before. Then over time, as more promoters and investors entered the market, variation in their design increased with some innovations becoming standard features while other innovations were abandoned.

Generally, financial innovation leads to variation in corporate structure while imitation creates standardization, Although SPACs are still sufficiently alike to be identified as members of the same class there has been substantial change in their design over time. This analysis concentrates on the key structural features of SPAC design such as; size, types of securities issued, stockholder protection, risk, reward and remuneration for insiders and underwriters.

SPACs were originally created and are most commonly found in the United States, but the structure has been also been used in the United Kingdom, Germany, Canada, South Africa, Korea and Malaysia. In the United States the development of the SPAC market can be divided into three distinct periods; an initial period between 1993 and 1996, a second period spanning their reintroduction in 2003 to the financial crisis of 2008, and a post-financial crisis period from late 2009. The initial period featured fourteen SPAC IPOs, in the second period the SPAC market grew quickly with 161 IPOs, the third phase began slowly with only one new issue in 2009, but another seventy-four IPOs


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followed between 2010 and 2015.[1] During the second period SPACs also gained greater acceptance with their introduction to the national exchanges, initially AMEX in 2005 followed by the NYSE and NASDAQ in 2008.

SPACs are highly standardized structures. For example, until 2013 all SPAC IPOs in the United States were unit offers where the typical unit consists of one share of stock and either one or two warrants.[2] A SPAC's main assets are the cash raised in the IPO and the skill and experience its managers will apply to achieving conversion into an operating business. Many have a director associated with a private equity, venture capital, or similar investment fund. The IPO is underwritten on a firm commitment basis and in many cases underwriter compensation includes a deferred component where approximately half the discount is held in trust until the firm completes its business combination. Underwriters may also receive options to purchase additional units at a premium to the offer price. Therefore, these underwriters have an on-going financial interest in the SPAC and may assist in finding and completing a business combination.[3]

Shell companies without an identified target business are very risky investments. They have no business history, no cash flows to analyze, and a large pool of cash that could be expropriated if steps are not taken to protect it. To mitigate these risks SPACs are designed to provide high levels of stockholder protection. To reduce expropriation risk most of the IPO funds are deposited in a trust account until a business combination is approved. Until recently public stockholders were also offered the opportunity to convert stock into their share of the trust account if they vote against the business combination, with most recent SPACs they can still convert if they do not approve of the business combination but the right to convert has been separated from voting on the business combination. A SPAC is liquidated, and trust funds distributed to public investors, if it fails to achieve a business combination within a time limit, usually between two and three years.

This analysis is based on identifying a wide range of variable features in SPAC design

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[1] These numbers are for IPOs in the United States.

[2] A variation on the standard format was used by seven dual-class unit IPOs which usually included two shares and up to ten warrants per unit. These were only OTC quoted and no new dual-class SPACs have gained quotation since December 2006. Although unit offers remain the most common structure, some recent issues are stock only with no warrants or are units combining stock and rights but no warrants.

[3] The SPAC structure has been copied in other countries with variation to suit local markets, for example warrants are not used in Korean SPACs and SPACs are restricted to the exchange's main board in Malaysia.


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and using cluster analysis to identify patterns in the evolving SPAC structure. SPAC prospectuses are highly standardized documents, containing a large amount of boilerplate. However, through careful reading of prospectuses it is possible to identify variations in SPAC design. Measuring these variables across the full population of SPAC IPOs from 2003 to 2015 it is possible to see how innovations are copied, extended or abandoned.

The results show that early standardization was quickly abandoned as issuers tried variations to SPAC design. Some poor innovations, such as dual class SPACs, took a while to show their costs but eventually the market learned and stopped using that variation. After a long period with little innovation the post-financial crisis period has seen a lot of variation, including some that have changed the defining features of SPAC firms.

The SPAC market remains largely self-regulated, albeit within the confines of an external regulatory environment involving Federal securities law, the Securities and Exchange Commission (SEC) and stock exchange regulations. SPACs were originally created and designed to avoid Securities Act Rule 419, and by remaining mainly outside the scope of targeted regulations SPAC promoters are free to modify company structures much more than if they were subject to regulations like Rule 419. SPAC design is still within the bounds of what the market is willing to accept. Even with stock exchange listings, new rules and regulations have largely followed existing SPAC practices rather than impose changes on their design.

## 2. EVOLUTION OF THE CORPORATE FORM

This paper explores changes in corporate form through an evolutionary lens. The approach taken here sees biological and non-biological forms of evolution as independent, and instead of a combination of variation, selection and retention looks for novelty, emergence and dissemination of ideas. Following Witt, (2008) this is the combination of a dualistic ontology and a generic evolutionary heuristic. This allows some flexibility in interpreting changes as evolutionary; the dualistic ontology approach does not necessitate any claims to evolutionary processes being in any way derived from fundamental rules of nature, the generic evolutionary heuristic is open to a range of mechanisms connecting antecedent and descendants.

Evolutionary processes are not new in business research. In some cases, such as Kole & Lehn, (1999), the evolutionary aspects are implicit. In that case deregulation of the airline industry resulted in the gradual movement towards airlines using the same corporate governance structures found in unregulated industries. Other researchers, such


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as Shepherd & McKelvey, (2009), take a more explicit approach to evolution by tracking 'organizational memes' in two contrasting environments to examine the variation of ideas produced in those environments.[4]

An evolutionary approach provides new ways to address corporate finance questions. For example, traditional approaches to capital structure theory present a range of conflicting hypotheses which years of research has failed to resolve. In contrast, using an evolutionary approach, Arce et al., (2015) showed how these hypotheses could co-exist as different firms copied other similar firms while ignoring the very different approaches to capital structure followed by very different firms.

Viewing the corporation as a nexus of contracts, following Jensen & Meckling, (1976), innovation occurs when the combinations of contracts constituting a firm changes. Change occurs through; the modification of previously used contracts, the introduction of new contracts, or use of new combinations of contractual relationships. While much innovation occurs in business, it is generally cheaper and easier to copy other successful businesses. Nevertheless much innovation still occurs; sometimes by accident, either due to an error in replication or through creating new combinations of contracts without necessarily thinking through the implications of that combination. When beneficial variations are recognized as an improvement they are likely to be copied and will become a standard feature. However, when there is no apparent benefit or cost in the new design both old and new versions co-exist leading to greater variation in the corporate form. Similarly, Farmer & Lo, (1999) argue that it is possible to view financial markets as an ecology where new strategies can lead to the extinction of older strategies. However, the process is imperfect and economic process may take a long time, but generally the process improves market efficiency.

The approach taken to innovation in this paper differs from the more common approach of identifying conditions conducive to innovation by concentrating more on the resulting variations innovation creates. Some researchers, such as Mitkova, (2014) examine how corporate structure affects innovation. Others, such as De Noni et al., (2013) are closer to this paper as they examine how the broader environment affects innovation in firms. However, as the regulatory environment is found to have little impact on SPAC design it makes more sense to pay more attention to the end result of the innovation here.

[4] Memes are the social equivalent of genes


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## 2.1. Prior Research and SPAC Design

As SPACs are shell companies created to undertake a business combination research on them concentrates on the two main transactions: the IPO and the business combination. These two transactions have to be carefully balanced in designing a SPAC. A successful IPO requires convincing investors that their funds are protected from poorly chosen business combinations, but management needs to retain sufficient control to ensure a reasonable degree of success in achieving business combinations.

SPAC promoters have a strong financial incentive to ensure a business combination occurs, Berger, (2008) and Jenkinson & Sousa, (2011). However, the contractual features necessary to attract investors can work against this goal when the time comes to approve a business combination. For example; holding more funds in trust increases the payout to investors voting against the business combination or selling through a tender offer. Similarly, having larger insider holdings, making more use of contingent remuneration and a higher ratio of warrants to stock all increase the potential stock price dilution that can occur after a business combination as insiders are now able to sell stock or exercise warrants. Awareness of this may also motivate public investors to vote against a business combination.

Most of the promoters' remuneration is contingent on a completed business combination. Insider stock has no claim on liquidation payments. Part of the underwriters' fees are withheld and insider warrants are held in escrow until after a business combination. Using contingent benefits ensures most of the funds raised can be held in trust for repayment to public stockholders who disapprove of the business combination. However, once a business combination has been achieved releasing stock from escrow and allowing warrant exercise dilutes the value of publicly-held stock. Therefore insiders must produce a strong argument to convince public stockholders approve the business combination and do not withdraw funds.

Boyer & Baigent, (2008) and Cizmovic et al., (2013) both argue that the probability of a successful business combination is a likely determinant of IPO initial returns. Larger public offers, higher conversion thresholds and involvement by private equity investors all generate higher first day returns. Larger public offers make more funds available, increasing the set of possible targets, and higher conversion thresholds make it harder for public stockholders to force liquidation so both increase the likelihood of a business combination. Similarly private equity involvement indicates the promoters are experienced in finding suitable targets.

Other factors theoretically affecting successful business combinations were empirically


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tested by Cumming et al., (2014). Combining contingent underwriter remuneration with higher ranked underwriters should increase the chance of success as better underwriters are more able to provide on-going assistance in creating a business combination. However, holding more funds in trust and higher managerial ownership do not have their expected relationships with business combination success.

Underwriter compensation has been examined by Rodrigues & Stegemoller, (2014) who argued that offering similar levels of compensation as offered on normal IPOs did not seem justified for shell corporations as they were much easier to analyze. They also noted changes in underwriter compensation, from fixed payments to having a component contingent on the business combination. While contingent underwriter payments should provide an incentive for underwriters to provide on-going support for the SPAC finding and completing a business combination, a different perspective was argued by Cumming et al., (2014) where a larger number of underwriters had a negative effect reflecting a free rider problem as underwriters providing on-going assistance would share the benefits with other underwriters who only participated in the IPO.

Although promoters need business combinations to benefit from their efforts in creating and running a SPAC, a business combination is not necessarily good for other investors. Howe & O'Brien, (2012) and Kolb & Tykvová, (2016) studied the post-combination performance of United States SPACs and found it was poor overall. Ignatyeva et al., (2013) found similar results for European SPACs. Both results suggest insiders' strong incentives to complete a deal led to value reducing business combinations despite public stockholders' ability to stop the deal and force liquidation.

To date research on post-financial crisis SPACs is limited, however, here have been some significant changes in SPAC design since 2009. For example; Rodrigues & Stegemoller, (2013) provide an extensive review of design variations. They associate these features with the prevailing regulatory environment and the features of private equity funds. They also identify new variations in SPAC design following the financial crisis, but as those changes occurred at the end of their sample period they are not able to evaluate the market's reaction.

While this literature has identified and tested many variables potentially affecting SPAC success rates, identifying causal relationships for combinations of design features is particularly problematic. For example; Shachmurove & Vulanovic, (2015) found that SPACs targeting mergers in the shipping industry were larger, used more underwriters and were more likely to successfully complete the business combination. Yet it isn't clear whether the higher success rate should be attributed to more funds being available,


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the use of more underwriters, targeting the shipping industry, or a combination of these factors.

## 3. THE EXTERNAL REGULATORY ENVIRONMENT

The structure of early SPACs clearly reflects the legal environment in which they were created. Holding funds in trust, time limits, stockholder voting on the business combination and providing conversion rights all emulate the provisions of Securities Act Rule 419. SPACs were designed to imitate the features of Rule 419 companies while not being subject to Rule 419. Therefore, it has been possible to gradually introduce changes to the SPAC structure over time without concern for the legal implications. Therefore, over time many once standard features of SPAC design have become optional. In order to understand how these changes are related to a changing regulatory environment it is first necessary to review the boundaries set by securities law and stock exchange listing rules.

### 3.1. Rule 419 and the Creation of SPACs

After the 1987 share market crash Securities Act Rule 419 was introduced to protect public investors in blank-check penny stock companies, SPACs soon followed as a way around Rule 419. SPACs were created to mimic Rule 419 protections, but without the strict limitations Rule 419 imposed.

Following problems with market manipulation of penny stocks, particularly blank check penny stocks in the late 1980s, trading restrictions and special rules for capital raisings were introduced in the early 1990s.[5] These rules were the Penny Stock Reform Act of 1990 (PSRA), Securities Exchange Act of 1934 Rule 3a51-1, and Securities Act of 1933 Rule 419.[6] PSRA section 503 provided the initial definition of a penny stock, later expanded by the SEC, in Rule 3a51-1, which specified the quantitative measures defining penny stock firms. PSRA section 505 restricted trading by preventing brokers from selling blank check penny stocks to investors who had not signed a waiver stating they were informed of the risks associated with such investments. PSRA section 508 gave the SEC a mandate to prescribe restrictions on capital raisings by blank check

[5] Niesar & Niebauer, (1992) describe broker-dealers purchasing a large amount of a penny stock to restrict its supply before aggressively promoting the firm to small investors to increase demand and raise the price. These dealers would resist clients' requests to sell stock until they had sold their own stockholding at the higher price.

[6] PSRA (1990): Pub. L. No. 101-429, 104 Stat. 931 (codified in various subsections of 15 USC §§77-78), Rule 3a51-1 (1992): 17 CFR 240.3a51-1, Rule 419 (1992): 17 CFR 230.419.


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penny stocks. Collectively these restrictions are known as Rule 419 and are primarily designed to prevent expropriation of stockholders' funds.

Rule 419 created a problem for legitimate blank check issuers, in particular PSRA section 505 which limited the pool of penny stock investors and restricted liquidity. A simple solution was to create larger blank check companies, as these were not penny stocks Rule 419 would not apply. However, simply bypassing the rule would create regulatory risk; the penny stock definition could easily change or trading restrictions could be extended to all blank check firms. A better solution was to create non-penny stock blank check companies with similar protections to Rule 419 firms. This limited regulatory risk while avoiding the stricter penny stock trading restrictions and SPACs are the result. They offer similar protection to Rule 419 offers by restricting the use of offering proceeds, limiting warrant exercise before a business combination, and allowing stockholders to withdraw funding if they do not approve of the business combination.

Both SPACs and Rule 419 blank check firms place most of their funds in trust. After deducting underwriting costs 90% of the proceeds of Rule 419 offers must be deposited in an escrow or trust account. The remaining 10% is used to finance the search for a suitable business combination. SPACs also place most of the capital raised in trust. As SPAC issues became larger less of the public issue was needed to cover search costs so more was placed in trust, in many cases much less than 10%. Rule 419 allows warrants to be exercised before a business combination provided the cash is added to the trust account. In contrast SPAC warrants can only be exercised after a business combination. As the exercise price is often less than the liquidation value these restrictions are important for ensuring stockholders' funds cannot be expropriated by warrant holders before a business combination. It also prevents warrant holders exercising to gain additional voting stock prior to the business combination.

Other differences between Rule 419 offers and SPACs cover business combination rules regarding target size, voting, and time limits. There is only a small difference regarding the size of the target; under Rule 419 the target firm's net assets must be at least 80% of the offering proceeds, while SPACs typically require a target firm's net assets to be at least 80% of the SPAC's net assets. Time limits differ as Rule 419 firms have a strict eighteen month limit to complete a business combination or face liquidation, while SPAC promoters choose their deadline and have used periods up to three years. SPAC time limits often include extension options if a target firm has been identified but the business combination has not been completed.


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Failing to achieve a business combination is costly to SPAC insiders. They have renounced any claim to liquidation distributions and they cannot sell their securities before a business combination as their units, stock, and warrants are in escrow.[7] Keeping insider securities in escrow reduces expropriation risk but means insiders will see any business combination is better than none. Longer time limits for achieving a business combination and setting a higher conversion threshold will reduce the risk of having to liquidate the SPAC, and forcing insiders to write-off their investment, but it does not necessarily improve the quality of business combination proposals.

Firms operating under Rule 419 must hold a vote on the business combination. Public investors who do not vote in favor of the business combination, including non-votes, have their stock redeemed for their share of the funds held in trust. Until recently SPACs used a two-stage process where those voting against the business combination have the right to make a separate election to convert their stock. While a two stage approach may reduce redemptions it exposed SPACs to the risk of large stockholders pressuring the company for a better redemption offer in return for a positive vote. Voting, combined with uncertainty over voting intentions, lengthen the business combination approval process. In response to these issues some post-GFC SPACs have abandoned voting on the business combination but left in place the option for stockholders to redeem their stock through a tender offer after the business combination is completed.

### 3.2. Exchange Listing Regulations

Originally SPACs were restricted to OTC markets, although it was common to seek exchange listing following a business combination. AMEX began accepting SPACs in mid-2005, NASDAQ and the NYSE in 2008, see Figure 1. Exchange listing subjects SPACs to additional regulation. Exchanges have a general right to refuse listing based on exchange officials' qualitative judgment, and use quantitative standards which must be met by firms applying for listing. Quantitative listing rules typically include; profitability, operating history, and market value standards.

[7] These restrictions only apply to stock and warrants allocated to insiders at nominal cost before the IPO, insiders can still claim liquidation distributions on stock they purchased during the IPO or in the secondary market.


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*Figure 1 Size of the SPAC Market 2003-2015*

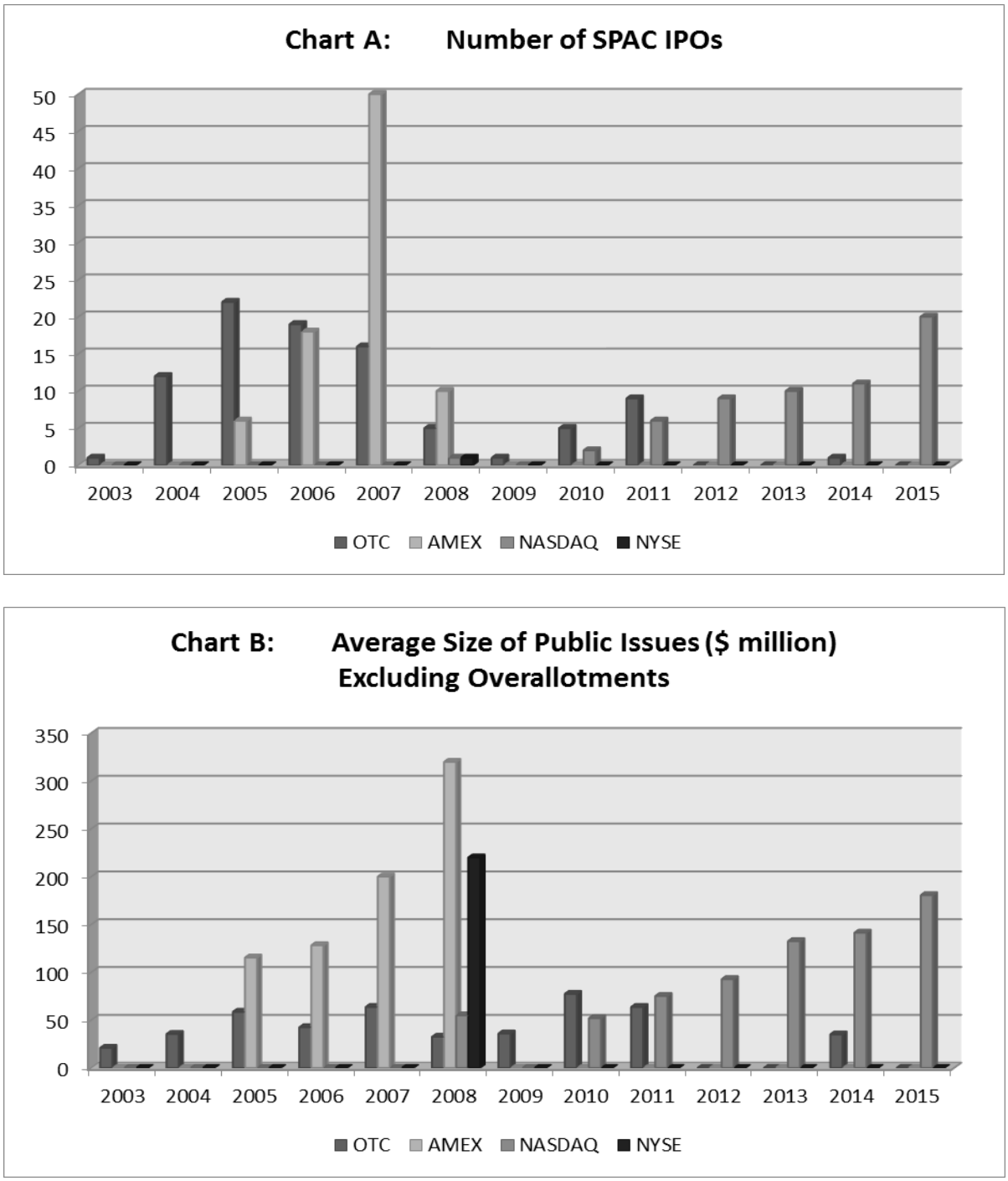


Figure 1 shows the SPAC market's development since 2003. The number of new OTC quoted firms dropped off after SPACs started listing on AMEX but the growth in AMEX listings was much greater than the fall in OTC. The average size of AMEX listings grew between 2005 and 2008 while the size of OTC SPACs remained steady. In the post-financial crisis period NASDAQ has become the preferred listing venue, almost to the complete exclusion of other markets.


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### 3.2.1. The American Stock Exchange

The American Stock Exchange (AMEX)[8] was the first to list SPACs. Until 2005 AMEX had used its discretionary authority, in Section 101 of the AMEX company guide, to prevent SPAC listings. In mid-2005 this changed with Services Acquisition Corporation listing on 30th June and Courtside Acquisition Corporation on 1st July.[9] As far as can be ascertained, there was no formal announcement of a change in policy from AMEX and no additional listing requirements were introduced for SPACs.

Section 101 contains the general listing criteria including four alternative quantitative listing standards. Initial Listing Standard One includes an income history requirement and Standard Two includes an operational history requirement, SPACs cannot satisfy either. Standards Three and Four have no company history requirement, but larger minimum market value requirements, of $50 million and $75 million respectively, which larger SPACs can satisfy.

In November 2010 the exchange, operating as NYSE-AMEX, adopted formal rules for SPAC issues as Section 119.[10] Section 119 requires: 90% of funds raised is held in trust, a maximum 36 month time limit, the value of business combinations is greater than 80% of funds held in trust, a stockholder vote on proposed acquisitions and stockholders voting against the deal are able to redeem their stock. In 2011 Section 119 was modified to allow business combinations to occur without stockholder votes provided stockholders were offered the opportunity to sell through a tender offer.[11]

### 3.2.2. NASDAQ

In 2008 NASDAQ allowed SPACs to list.[12] SPACs seeking a NASDAQ listing must hold at least 90% of the gross proceeds from the IPO in a trust, escrow, or separate bank account. The business combination must be completed within 36 months and have a value at least 80% of the deposit account. The business combination must be approved by public stockholders and a majority of the firm's independent directors. SPACs listing on NASDAQ must also satisfy the normal market value listing criteria. The NASDAQ Capital Market required new listings to have a market value of at least $50 million. For

[8] The AMEX exchange is now owned by the NYSE and currently operating as NYSE MKT.

[9] Following their business combinations Services Acquisition Corporation became Jamba, Inc. and Courtside became American Community Newspapers, Inc.

[10] SEC application SR-NYSEAMEX-2010-103.

[11] SEC application SR-NYSEAMEX-2011-04.

[12] SEC application SR-NASDAQ-2008-13.


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larger firms the NASDAQ Global Market allowed listings by firms with a market value of $75 million. The first SPAC IPO on NASDAQ listed in August 2008.[13] In December 2010, NASDAQ modified its listing rules to allow SPACs to hold a tender offer in lieu of a stockholder vote on the business combination.[14]

#### 3.2.3. New York Stock Exchange

Before 2008 the NYSE listing rules required firms to have either operating profits or an operating history, so SPACs could not list until after a business combination. In March 2008 the NYSE proposed modifying its listing rules to allow SPAC listings.[15] To list a SPAC on the NYSE it must require a majority vote by public stockholders on a business combination. The firm must also offer dissenting stockholders conversion rights with an upper limit, no more than 40%, beyond which the firm must be liquidated. A business combination must be completed within three years. Founding stockholders must waive their rights to the liquidation distribution, and underwriters to deferred fees, if the firm cannot complete a business combination. The NYSE also requires SPACs to have an aggregate market value of $250 million, at least $200 million of which is publicly held. Unlike the NYSE-AMEX and NASDAQ the NYSE has not modified its listing rules to allow SPACs to replace a vote on business combinations with a tender offer.

These changes were approved in May 2008. Heckmann Corporation transferred from AMEX shortly after the SPAC listing rules were adopted. It was still a SPAC as it had not completed a business combination. Navios Maritime Acquisition Corporation was the first SPAC IPO on the NYSE, in June 2008. As far as can be ascertained no other SPAC IPOs have taken place on the NYSE.

### 3.3. Seasoning of Reverse Merger Corporations

The SPAC market has encountered problem has been with the quality of financial reporting provided by Chinese firms using business combinations with SPACs to enter the United States market, Haims et al., (2014).[16] In response to this issue NYSE-AMEX, NASDAQ and NYSE all introduced listing rules for companies created through reverse

[13] Many earlier SPACs had listed on NASDAQ following business combinations.

[14] SEC application SR-NASDAQ-2010-137.

[15] SEC application SR-NYSE-2008-17, and NYSE Listed Company Manual Section 102.06.

[16] In some of the cases allegations of misleading reporting were based on differences between United States and Chinese accounts, but this was allowable when accounting rules differed.


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mergers.[17] Such companies now need to trade on OTC markets or another exchange for 12-months before listing on AMEX, NASDAQ or NYSE. They also need to establish a record of audited financial statements and maintain a minimum share price for a set period. As all three exchanges introduced these seasoning rules around the same time the SEC arranged for the rules to be standardized across exchanges, reducing the possibility of regulatory arbitrage.

The effectiveness of the new rule is questionable. Firstly, the rule affects SPACs seeking exchange listing following a business combination which can be avoided by SPACs listing on exchanges before their business combination. A trend towards exchange listing after the change is clearly evident in Figure 1. Secondly, some of the Chinese companies the SEC had taken action against were not listed through reverse mergers. Therefore targeting reverse merger transactions misses some of the companies that should be targeted. Thirdly, as Crivellaro, (2012) argues, the seasoning requirement will not be effective against deliberate schemes to mislead as they are unlikely to be discovered within the twelve-month seasoning period.

### 3.4. The JOBS Act and SPACs

The objective of the Jumpstart Our Business Startups (JOBS) Act is to make it easier for small businesses to become public companies, creating growth and employment. As such the Act could undermine SPAC's raison d'être as a vehicle for bring private companies to the public market. Instead Rodrigues, (2012) notes that it has become common for SPACs to claim 'emerging growth company' status, with the associated reduced reporting and compliance requirements, to present themselves as a low cost way to access public markets. Meeting the emerging growth company standards is unlikely to be a problem for modern SPACs, qualification will be virtually automatic for any new SPAC claiming emerging growth company status.[18]

## 4. DATA AND METHODOLOGY

The population of United States SPAC IPOs was identified by reviewing initial filings (S-1 for domestic firms and F-1 for foreign) for firms using Standard Industrial

[17] See SEC applications SR-NYSEAmex-2011-55, SR-NASDAQ-2011-073, SR-NYSE-2011-38 and SEC Investor Bulletin: Reverse Mergers 2011-123.

[18] Companies do not qualify as emerging growth companies if their IPO was on or before December 8th 2011 or they have revenues over $1 billion. Emerging growth companies lose their status after: five years after their IPO, recording annual revenues over $1 billion, raise more than $1 billion in non-convertible debt over three years, or are valued over $700 million.


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Classification code 6770 (blank checks). The resulting list was cross-checked by searching new OTC quotations and exchange listings for company names including the word acquisition, which is often included in SPAC names, and unit offers. In total 236 SPAC IPOs were identified between August 2003 and December 2015.[19] This population covers the same period and is the same size as that identified by Kolb & Tykvová, (2016). These 236 SPACs include 92 which were initially OTC quoted, 84 listed on AMEX, 59 on NASDAQ and one on the NYSE. Figure 1 presents the number and average size of SPACs by year.

Data was extracted from the prospectuses of all 236 SPACs obtained from SEC-Edgar.[20] From the literature and content analysis the main features of SPAC issues were identified, including both qualitative and quantitative variables. Content analysis also revealed a number of changes and innovations in SPAC design spanning each offer's core financial details, insider and underwriter remuneration, corporate governance and stockholder rights protection features. The main changes, including their first occurrence, are listed in Table 1.

While it is interesting to look at individual changes, combinations of changes are more interesting from an evolutionary perspective. The raw data was used to construct a dis-similarity matrix, which measures how different each company is from the others. The dis-similarity matrix was then used to perform a cluster analysis in which groups of similar companies are identified.

Results depend on the number of clusters chosen. Clustering starts with all observations in their own, one-member, group. Then, the two closest observations are combined. This process is repeated with either single observations or clusters being combined until the desired number of clusters is formed. There are a number of techniques for determining the appropriate number of clusters, but the basic principle is to balance similarity within each cluster against differences between clusters. Using the 'elbow' method the appropriate number of clusters for this dataset is twenty-six.[21]

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[19] The 1990s SPACs are excluded from the sample as their prospectuses are not available from the SEC-Edgar website.

[20] These are Rule 424 filings lodged as the firm completes its IPO, not S-1 or F-1 initial filings.

[21] The elbow method takes its name from identifying the bend in a graph of: within-cluster-sum-of-squares against the number of clusters. This identifies the point at which combining observations into fewer clusters requires a much larger step than had been required beforehand.


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*Table 1. SPAC Design and Market Innovations*

| Sequence Number | Company Name and IPO Month | Innovation(s) | Cluster Number | Occurrences in Cluster |
|---|---|---|---|---|
| 4 | Great Wall Acquisition, March 2004 | Not using Earlybird Capital as the lead underwriter.<br>CEO or Chair not associated with private equity.<br>Raising more than $21 million in the public issue. | 1 | 4 out of 12<br>3/12<br>8/12 |
| 8 | Trinity Partners Acquisition, August 2004 | Dual-class units.<br>Units not priced at $6.<br>Using a (shorter) time limit. | 2* | 6/6<br>6/6<br>3/6 |
| 12 | International Shipping Enterprises, December 2004 | Did not offer underwriters an option to buy units as part of their compensation.<br>First single-class SPAC to use a shorter time limit. | 3 | 2/16<br>3/16 |
| 20 | TAC Acquisition, June 2005 | Using a different lockup period for insider stock. | 3 | 2/16 |
| 21 | Services Acquisition, June 2005 | Exchange listing.<br>First single-class SPAC not priced at $6.<br>Units contain one warrant (not two) | 4* | 3/9 |
| 32 | Ad Venture Partners, August 2005 | First using deferred underwriter compensation | 5* | 11/12 |
| 40 | Star Maritime, December 2005 | First conversion limit higher than 20%. | 8* | 3/3 |
| 47 | Oracle Healthcare, March 2006 | Allow overallotments to be covered by on-market purchases instead of issuing additional units. | 7 | 1/19 |
| 60 | Shanghai Century, April 2006 | F-1, foreign issuer, filing. | 7 | 1/19 |
| 70 | Rhapsody Acquisition, October 2006 | Longer time limit (without an extension) | 12* | 15/15 |


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| | | | | |
|---|---|---|---|---|
| 142 | Liberty Acquisition Holdings, December 2007 | Units contain half a warrant. | 17 | 1/8 |
| 163 | 57th Street Acquisition, May 2010 | Tender offer for public investors in lieu of stockholder vote. | 18* | 12/13 |
| 166 | Australia Acquisition, November 2010 | Discretionary use of either tender offer or stockholder vote. | 16 | 2/10 |
| 184 | Committed Capital Acquisition, October 2011 | No tender offer or vote on business combination. Warrants not redeemable. | 21* | 2/2 |
| 190 | Hyde Park Acquisition II, August 2012 | Stock-only public issue. | 22* | 3/5 |
| 195 | H2 Financial Management, March 2013 | Stockholder vote without a redemption threshold (except company value must not fall below $5 million). | 23* | 5/5 |
| 198 | Silver Eagle Acquisition, July 2013 | More than one warrant needed to buy one share. | 25* | 12/13 |
| 202 | Quartet Acquisition, October 2013 | Units contain rights that can be exercised following a business combination | 23 | 3/5 |

List of design innovations and significant changes in the SPAC market 2003-2014. The sequence number is ordered by IPO date, starting with Millstream Acquisition Corporation in August 2003. The final column shows how many members of the cluster have the same feature.

* Indicates this firm was the first member of its cluster.

Analysis of the clustering, using the silhouette plot in Figure 2, shows that overall the clusters are not strongly defined.[22] Well defined clusters appear as many lines of equal

[22] The high number of variables used means many dissimilarities between companies are observed, therefore it should be expected that clusters will not be well defined.


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or similar length, creating a rectangular shape, in poorly defined clusters each successive line is shorter creating a triangular shape. Although each firm is allocated to the cluster it fits best, a large number of short and negative lines signify firms that poorly fit their cluster. Nonetheless, many of the early clusters and some later clusters contain well defined sets of companies. Interestingly the two last clusters contain a large number of members; cluster twenty-five (C25) contains thirteen companies and cluster twenty-six (C26) contains eleven. This indicates that although recent SPAC issues are not identical, they contain enough similarities to suggest the market is consolidating around two common designs.

The full cluster dendrogram is shown in Figure 3. This shows the relative positions of each cluster and the degree of difference between pairs of clusters. Figure 3 can be interpreted by picturing a vertical line running down the page and crossing the horizontal lines which indicate clustering. The 'height' indicates the degree of difference between clusters. On the right-hand side of the dendrogram that vertical line would only cross two horizontals, creating two large but very different clusters, each containing a lot of variation. The upper cluster mainly contains early SPACs, detailed in Figure 4, while the larger lower cluster mainly contains mid-period and recent SPACs. As you move to the left the vertical line crosses more horizontals as the clusters bifurcate. Initially this is mainly in the lower section where there are more firms and greater variation. Moving far to the left takes us to the 26 clusters indicated, each only a little different to its immediate neighbors. Interestingly, of the three most recent clusters; C24, C25, C26, the first two are neighbors but C26 is distinctly separate from the other two.


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*Figure 2: Silhouette Plot for 26 Clusters*

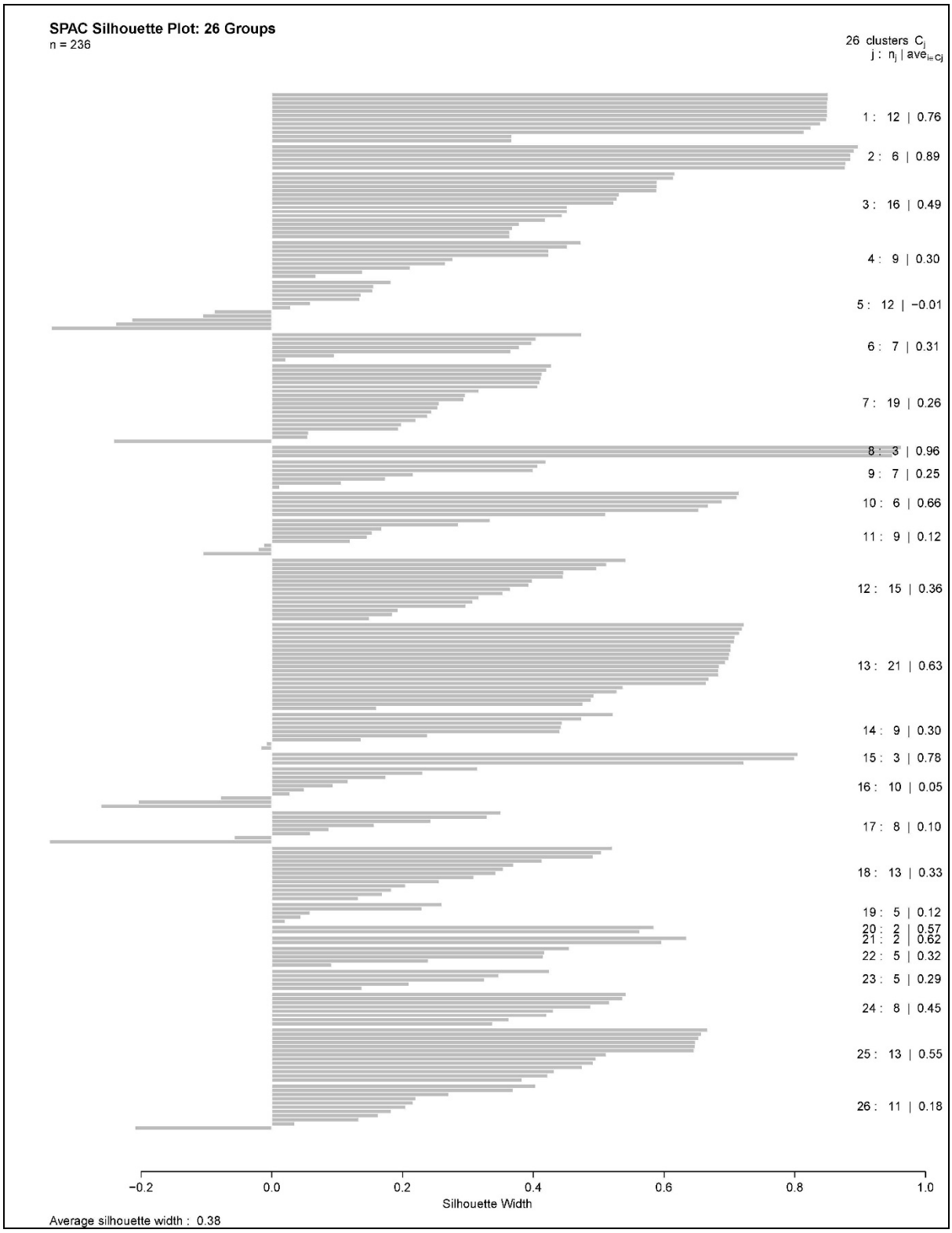



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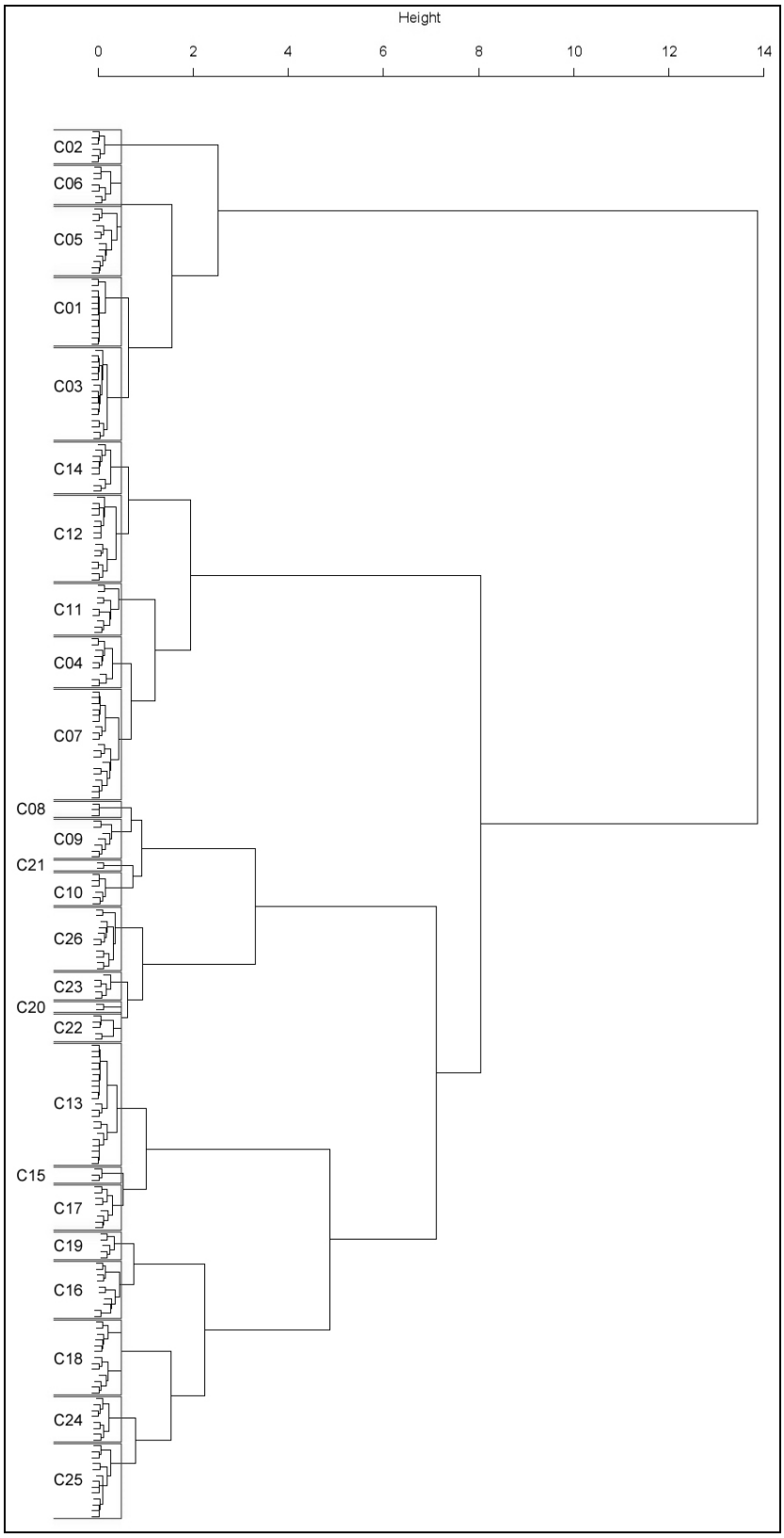
*Figure 3: Dendrogram for all 236 SPACs Showing Clusters*




Full cluster dendrogram including cluster numbers. Sequence numbers and company names are excluded due to space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constraints.

## 5. RESULTS

### 5.1. Clusters Containing Early SPACs

Figure 4 shows a detailed version of the upper arm of the dendrogram including company names, their sequence numbers and cluster numbers. This section of the dendrogram includes most of the earlier SPACs in the sample and five of the first six clusters.

C01 contains twelve companies in two groups. The main group includes ten of the first fourteen SPACs created since their reintroduction in 2003. The other group contains two virtually identical companies, Chardan South China and Chardan North China, which had the same promoters and were quoted simultaneously. The only difference between these two companies is that one sought a business combination with a company in North China and the other in South China so it is clear that they should be grouped together. Although they are in C01 they differ from other members of the cluster by insiders paying slightly more for their warrants.

C02 contains six companies, these are the first six of the seven dual class SPACs. Although these are all in the same cluster the dendrogram shows they are split into two groups. Differences between these two groups are evident in the amount of time allowed, which was longer for the later issues, and underwriting fees, lower in the later issues. The seventh, and last, dual class SPAC incorporated a number of differences from these six.[23] It is located in C09.

Companies in C03 and C05 are very similar to those in C01. If fewer clusters were chosen then it is likely that C01 and C03 would be one of the first to combine. Companies is C03 and C05 are much larger on average than those in C01, and therefore can afford to hold a higher percentage of funds in trust and pay underwriters a smaller percentage of funds raised.

C04 is not shown in Figure 4. The main difference between C04 and clusters 1, 2, 3, 5 and 6 is the use of a different offer price per unit and the change to units containing only one warrant. C04 also contains some of the first exchange listed SPACs, but it is not until C06 that we find a cluster excluding OTC quoted companies.

[23] Unlike the other dual class SPACs Middle Kingdom Alliance Acquisition Corporation had a lower offer price, less stock and warrants per unit, insiders purchased units instead of warrants and deferred some of the underwriter's remuneration.


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### 5.2. Clustering Around the Global Financial Crisis

Initially it looked like the financial crisis had killed SPACs with no IPOs between September 2008 and late November 2009. However, eight SPACs completed their IPO during 2009-2010. Although some of these offers were very similar to pre-financial crisis offers, innovations during this period created one of the most significant changes to SPAC structure – using tender offers instead of allowing stockholders to vote on the business combination.

Initially a standard issue SPAC was used to restart the market. The sole 2009 offer, GSME Acquisition Partners, along with eight other post-financial crisis firms, are grouped with a pre-financial crisis firm in C16. The main distinctive features of this cluster relate to its use of underwriter options, cheap insider warrants, short time limits and small amounts raised. The use of short time limits and raising small amounts seems rational in the post-financial crisis period where confidence in SPACs needed to be rebuilt.

The following SPAC, 57th Street General Acquisition Corporation, was the first to abandon stockholder votes on business combinations in favor of a tender offer for stockholders who wanted to withdraw their investment. It, and other members of C18, were in some other respects no different to C16 firms. They also sold warrants to insiders cheaply, had short time limits and raised small amounts. In addition to the tender offers they also differed in not using underwriter options, although it is not readily apparent how these two features could be connected.

### 5.3. Clusters Containing Recent SPACs

The two clusters containing the most recent issues, C25 and C26, together contain 24 of the 39 SPACs formed since July 2013, starting with Silver Eagle Acquisition Corporation. These two clusters are all S1 registrations, listing $10 units containing one share of stock and one warrant on NASDAQ. The underwriters are not offered an option to purchase units as part of their remuneration.

Some standard features of C25 firms are also common, but not universal, features of C26 firms. For example, C25 firms all have a maximum time limit of 24 months and in most cases this is a single set time limit with no provision for extension, in comparison almost half the C26 firms have shorter time limits. Similarly all C25 firms have a warrant exercise price of $11.50, seven C26 firms also use $11.50, but four set a higher exercise price. Conversely eight C26 issues include rights while only one C25 firm does.


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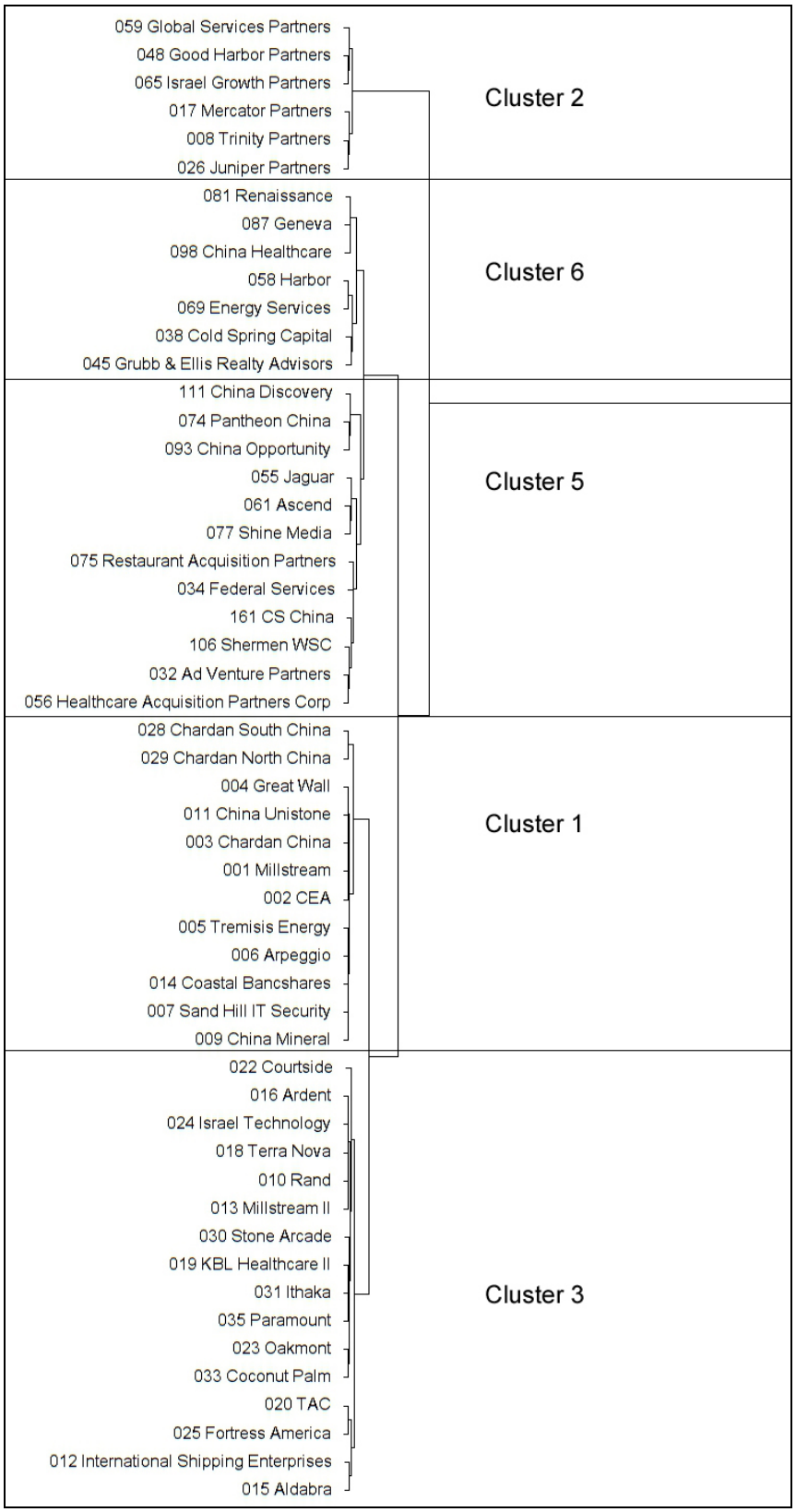
*Figure 4: Detail of Dendrogram with Sequence Numbers, Company Names and Clusters*




Detail of upper arm of Dendrogram in Figure 3 with sequence numbers, company names added.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Other differences are more distinct. In all C25 firms insiders hold warrants not units, while C26 insiders all hold units. Only one C26 firm uses deferred underwriter payments, all C25 firms use them. All C25 firms hold exactly 100% of public funds in trust, all but two C26 firms hold more. C26 firms either allow voting on business combinations or retain the option to have a stockholder vote, eight C25 firms have the option of a stockholder vote but the remaining five will use tender offers instead. C25 firms average $253 million raised, C26 $62 million.

## 6. ANALYSIS

By designing SPACs to avoid Rule 419 their original promoters created a flexible structure that could adapt to changing market environments and potentially lead to stronger corporate structures. However, during their first phase in the 1990s little variation occurred and the SPAC structure was not imitated by other promoters. This resulted in SPACs being abandoned when the original underwriter suffered reputational problems.

Following their re-introduction in 2003 SPAC design underwent frequent modification as new promoters entered the market trying new variations. There were, however, some problems due to delays in discovering which adaptations were improvements and which should be abandoned. Then, with the onset of the 2008 financial crisis, liquidity shortages meant many investors simply wanted to withdraw their funds irrespective of SPAC design or the quality of any proposed business combination.

Following the 2008 financial crisis liquidity shortages and investor preference for safer investments would make it difficult for SPACs to achieve successful business combinations. Promoters of new SPACs in this environment would be expected to modify their design to increase the chance of success. Possible options included increasing the time limit, increasing the conversion threshold or changing voting rights. In practice time limits were shortened while voting rights were exchanged for tender offers and conversion thresholds changed into much higher tender offer limits.

The exchange-imposed standards codified the self-imposed standards used by existing SPACs, so did not require any changes to SPAC design. For example, many SPACs already placed over 90% of the gross offer proceeds in trust, and those under 90% tend to be smaller issues which would not meet the size requirements for exchange listing. The 36 month time limit was met by all existing SPACs, with many using a shorter limit. Setting an 80% minimum for the size of the business combination was also standard practice.


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With the 2010 change to SPACs using tender offers in place of stockholder votes on business combinations there was a risk that no SPACs would meet the third requirement. However both NASDAQ and NYSE-AMEX relaxed their rules to allow SPACs using tender offers to list. Following the introduction of seasoning rules for reverse merger companies NASDAQ has become the dominant market for SPAC IPOs.

The end of sample period sees two types of SPAC design in common, but not universal, use. One for, smaller issues, features firms; either allowing voting on business combinations or retaining the option to have a vote, has insiders holding units, with shorter time limits, holding more than 100% of public funds in trust and often including a rights issue. The other, for larger issues, features firms with insiders holding warrants, deferred underwriter remuneration and provisions for using a tender offer in place of stockholder voting. While these two designs were common at the end of the sample period, there is no obvious reason why further adaptation would not occur.

## 7. CONCLUSION

The SPAC market shows clear signs of evolutionary development, although not in a strict biological sense. Reproduction processes are obviously much looser, new SPACs do not necessarily copy the most recent SPACs and may imitate features from a number of parents. Corporate evolution is not blind, and not necessarily random. Design changes are deliberate, even if it is not always clear that the change is an improvement. Given time to see the consequences of a design change we can expect promoters to learn which adaptations work and keep them for future issues.

The period between 2003 and 2008 witnessed increased variety in SPAC design. Convergence on any particular combination of features tended to be short lived as undermined by new innovations. This may have helped SPACs survive the financial crisis, but unlike biological evolution it was not so important to have variety when the environment changed, it was important to be able to change and innovate afterwards to adapt to the new environment. In the post-financial crisis period the first offer featured little variation from what had come before. However, soon significant variation occurred, in particular with the introduction of tender offers in place of stockholder voting on the business combination.

While SPAC design appears to have coalesced around two common forms at the end of the sample period, there is no reason to suspect that the evolutionary process is over. Regulators have largely left the market free to try new designs provided basic stockholder protection remains in place. New promoters are free to enter the market and


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try to attract market share by proposing new designs, established promoters can modify their designs to reinforce their position in the market.

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