Start-Up Chile: A Critical Analysis

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Executive Summary

Start-Up Chile (SUC) is an attempt by the Chilean government through its innovation arm, InnovaChile, to stimulate start-up activity and to foster an entrepreneurial climate by offering seed capital in the amount of $40,000 and a free visa to entrepreneurs interested in incubating their ideas in Chile.

The program has arguably achieved some important successes in changing the entrepreneurial mindset in Chile; the evidence for this includes an increased number of respondents on the GEM survey indicating interest in starting a business, which jumped by over 1/3 from 2008 to 2011. However, while the program is on target to achieve its goal of hosting 1,000 entrepreneurs by 2014; while it has produced some intermediate results in terms of meetings held and conferences in which participants have taken place; and while the program has garnered an enormous amount of international publicity, it is unclear if or how SUC will be able to convert these successes into demonstrable achievements in terms of start-ups that locate in Chile longer-term and create jobs for Chileans.

There are several reasons for this. First, the program falls well short of offering the full "ecosystem" of services required to truly serve as a business accelerator. While the program does offer start-up capital and some limited business support, mentorship is not really a meaningful part of the program, nor are linkages to customers. Second, local private capital is difficult to access and has, by and large, been a non-factor in SUC. This is due in part to the substantial stakes on which local venture capital firms insist in exchange for making their investments; which is in turn a function of a lack of familiarity on the part of Chilean VCs with technology start-ups. However, breaking this loop will be a challenge; and at the moment the binding constraint may be more likely to be a lack of good ideas due to prevalent monopolistic behavior in the country than access to capital. It is possible that capital will respond to better investment opportunities.

Finally, the entrepreneurs that SUC has attracted to date are not necessarily the kinds of firms that are likely to stay in the country for the long haul; nor are they especially catalytic in nature. Rather than attracting technology firms or those in natural resource industries consistent with the country's competitive advantage, the bulk to date have been social media companies that are unlikely to leave a lasting imprint on the country's economy.

The country's political dynamics also create uncertainty around whether SUC will survive. Michele Bachelet of the left-leaning Concertacion party was elected in Chile's March 2014 election, replacing the right-leaning party that instituted Start-Up Chile; and some of the top officials from her previous administration have expressed doubts about whether SUC is worth the investment. Still, SUC presents an interesting model for other countries to consider; and has certainly raised the profile of entrepreneurship globally.

I. Political and Economic Context of the Initiative

Political Context

Chile is 25 years removed from the authoritarian government of General Augusto Pinochet, who ruled Chile from the time he overthrew the government of President Salvador Allende in 1973 until he was removed from office via referendum in 1990. An enormously controversial and polarizing figure, Pinochet was embraced by the nation's political Right for the free market economic reforms that he put into place in the wake of Allende's Socialist regime; but demonized by the Left for the deaths and disappearances of thousands of Allende's supporters.

Pinochet's legacy has two key implications today. First, the country remains deeply divided politically between his supporters and his opponents. Although the left-wing Concertacion coalition ruled Chile for the first two decades after Pinochet's departure, the country elected its first right-wing government, the "Coalition for Change" under current President Sebastian Pinera, in 2009. Despite his initial popularity, however, Pinera's approval rating had fallen to just 32% as of September of 2012, and the Concertacion performed better in the most recent municipal elections held in October of 2012.[1]

Second, and perhaps more importantly for our discussion of economic development, the free-market model that Pinochet (and the "Chicago boys", the University of Chicago economists who were the brain trust behind it) put into place has been broadly accepted by both parties. The series of Left-leaning presidents who held the Presidency for two decades from 1990-2009 made only minor modifications to the model. This has principally involved the negotiation of free trade deals rather than their unilateral dismantling, which was a staple of policy under Pinochet.[2] The primary difference between the two parties today is on social issues; where the Concertacion has traditionally supported a stronger (and generally popular) social safety net.

Today Chile is known as one of the most stable and best-governed countries in the region, and indeed in the developing world. Transparency International ranks Chile 20th worldwide in its 2012 Corruption Perceptions Index (only Barbados does better among developing countries); and the World Bank's 2011 Governance Index ranked Chile 25th overall, in a virtual tie with Uruguay and trailing only Costa Rica in the region and among developing countries.

Economic Context

[1] Peter J. Meyer: "Chile: Political and Economic Conditions and U.S. Relations", Congressional Research Service, December 19, 2012, Executive Summary.
[2] Ibid, p. 3.

Chile is characterized by its stable, open macroeconomic environment. In 2012, Chile ran a budgetary surplus of 1.4% of GDP and had a public debt of only 10.1% of GDP.[3] Its economy is driven largely by openness to trade and foreign direct investment; Chile claims 60 trade agreements[4], and foreign direct investment quadrupled from 2003-2010 to $15 billion.[5] These features have driven annual economic growth that has averaged 4% per year since 1999[6] and brought Chile to the verge of developed-country status, with GDP per capita of $14,403 in 2011.[7]

Despite these enormous achievements, it may be that Chile has reached the limits of what its strong macro-political and economic fundamentals can achieve; and that making the leap to developed-country status will require additional strength at the micro-economic level, which is currently the country's greatest weakness.[8] This is reflected in the country's performance on the Global Competitiveness Report (GCR).[9] Chile's rank on each of three pillars in the 2012-13 GCR (Basic Requirements, Efficiency Enhancers, and Innovation and Sophistication Factors) is 28th, 32nd, and 45th, respectively; suggesting the country performs better on factors more often associated with income per capita growth at lower income levels than a country approaching developed-country status. In particular, the country shows weakness on the nature of competitive advantage (114th), likely stemming at least in part from the country's capacity for innovation (83rd). (GEDI suggests this is primarily a process innovation, rather than product innovation, issue. We will look at GEDI in more depth shortly.) These can both be traced back at least in

[3] CIA World Factbook.

[4] Gobierno de Chile, MInisterio de Relaciones Exteriores, "Tratados de Libre Comercio: Acuerdos Comerciales Vigentes", http://www.direcon.gob.cl/acuerdo/list as referenced in Meyer, p. 8.

[5] CIA World Factbook.

[6] Ibid.

[7] Meyer, p. 8.

[8] Conventional wisdom has held that middle-income countries often fall victim to a "middle-income trap" related to the fact that they boast neither the low wages that drive growth in poorer countries nor the sophisticated technologies that drive growth in richer ones. Authors such as Barry Eichengreen, of the University of California-Berkeley, have even identified "bunching" or "traps" at specific income levels, one of which he identifies as falling in the $15,000-$16,000 range. This would suggest that Chile could be on the verge of falling into such a "trap". However, this logic was challenged in a February 16, 2013 article in the *Economist*, entitled "Middle-Income Claptrap". The article suggests that, as long as pay and productivity remain in line with one another, no particular income level should represent a particular threat; and that the "traps" identified by Eichengreen and others are really just growth slowdowns, which one would expect as any country's income level increases. In either case, there are limits to the ability of Chile's model to lift incomes in the long run, as its exports remain driven largely by primary products (which we will discuss in more detail shortly). Unless current productivity levels increase, it would stand to reason that the country will eventually encounter stagnating wages.

[9] It is worth pointing out here that the GCR does not actually measure "competitiveness". (Competitiveness is defined as productivity, and thus can be measured already without the help of the GCR). Rather, it is an attempt to *explain* differing levels of productivity to provide policymakers with a guide regarding how to improve their countries' competitiveness. It therefore uses a model (hypothesis) about the factors that contribute to a country's level of competitiveness and the degree to which each does so; and then uses a combination of hard data and an Executive Opinion Survey (EOS) to assign scores to a country on each factor. The GCR suffers from a number of imperfections which we do not have space to go into here. However, the index does show a broadly positive correlation with GDP per capita levels; and remains the most popular tool for assessing and explaining a country's overall competitiveness.

part to education; Chile scores 119th in the GCR on the quality of primary education, 91st on quality of the educational system, and 117th on the quality of its math and science education. It is also possible that the extent of market dominance of large firms (112th) has played a role in stifling innovation.

A close examination of Chile's export composition is consistent with our picture of a country that has relied heavily on macroeconomic strength (and primary product exports) rather than microeconomic advantages. Exports as a whole constitute 42% of Chile's overall GDP[10]; while a June, 2011 paper[11] suggested that, as of 2008, 50% of Chile's export mix consisted of copper. (More recent data suggests that, in 2011, copper and other extractives constituted about 60% of the country's export base; representing around $48 billion of the country's $78 billion in total exports[12]). That suggests that, currently, nearly 1/4 of Chile's GDP is a function of copper exports. Other top exports, such as timber products, are also generally primary products.

As with many countries highly dependent on a single natural resource export, copper has been a mixed blessing for Chile. Although it serves an important foreign exchange function, as well as being an enormous contributor to GDP and employment, copper has also discouraged export diversification; in part by providing a disincentive to diversify, and in part because increasing copper prices also drive up the country's exchange rate, making its other exports (such as salmon, of which it is the world's second-leading exporter, and wine, in which it is fourth) more expensive on world markets. Importantly, Chile has established a copper stabilization fund (similar to Norway's) to smooth the revenue inflows from copper. When copper prices are low (below the equilibrium price) the fund is used to pay for social spending; conversely, when copper prices are high, the fund is replenished by the surplus.

II. Evolution of Chile's Economic Development Policy after Pinochet

Cognizant of the need to upgrade Chile's competitive position in the world economy, the government of Ricardo Lagos in late 2000 started the High-Technology Investment Promotion Program under the auspices of CORFO, the country's economic development agency. The purpose of the program was to identify and promote foreign direct investment in several niches in "high technology" sectors, which were originally defined as biotechnology, software, and back office operations (call centers and shared services). The original program had two objectives: 1) diversification of the country's industrial and export base; and 2) increased employment. Particular emphasis was placed on encouraging companies to locate outside of the capital city of Santiago, in the hope that the benefits of economic development could be spread more broadly across the country. If Chile were able to attract a few world-class companies, they

[10] www.tradingeconomics.com, Banco Central de Chile.
[11] Meller, Patricio and Simpasa, Anthony. "Role of Copper in the Chilean and Zambian Economies: Main Economic and Policy Issues", Working Paper No. 43, GDN Working Paper Series, June 2011.
[12] Source: UN Comtrade.

could serve as "magnet" firms that could become the center of an industrial cluster, with the attendant spillover effects on local firms.[13]

Early successes were primarily in back-office operations, driven by the relatively low cost and high quality of connectivity in the country. The program had some notable achievements, with investments made by major international companies such as Banco Santander in financial services and Delta Airlines, which established its call center for the Spanish-speaking U.S. market. Around 2005 (now under a new President, Michelle Bachelet) the program's emphasis shifted from lower value-add activities to activities with higher value addition in global services. The program also had some success in the development of niche software for the mining sector, taking advantage of the country's strength in extractives.

In 2010, the World Bank was asked by CORFO to conduct an evaluation of the program. The evaluation determined that the program had provided financial support to 47 enterprises through 2009; that about $283 million of investment had been committed to the country; and that job creation had exceeded the goals originally established by CORFO. However, the impact analysis conducted by the Bank was unable to find a difference in terms of total employment and R&D between the control and treatment groups; although they did find a higher propensity to export in firms that had received support.[14]

When the government of Sebastian Pinera took power in 2009, CORFO was re-organized and the High-Technology Investment Promotion Program was scrapped. There was insufficient political consensus around what was essentially a form of industrial policy in a country that had historically embraced policies of non-intervention in markets. This lack of support had jeopardized (fatally, as it turned out) its continuity under a new government of the opposition.

III. Chile's Entrepreneurial Climate

Before proceeding to our discussion of Start-Up Chile, it is worthwhile to review the state of entrepreneurship in Chile. We will do so by examining Chile's performance on the 2012 Global Entrepreneurship and Development Index, or GEDI (as of this writing, the 2013 GEDI report was not available); and the 2011 Global Entrepreneurship Monitor (GEM), which is the latest GEM report to include a detailed accounting of Chile's performance.

Chile was ranked 22nd in the 2012 GEDI index, one spot behind Israel. (Israel would appear to be scored low on the index relative to what we know about the country's actual performance).[15] Chile generally performed best on its entrepreneurial attitudes; less well on

[13] Vivek Wadhwa, writing in *Innovations* Journal in 2012 (vol. 7, no. 2, pp. 25-27), has criticized this and other similar initiatives for trying to create clusters from scratch.

[14] https://www.wbginvestmentclimate.org/advisory-services/investment-generation/investment-policy-and-promotion/investor-facilitation/chile.cfm

[15] It is unclear if a country's rank on the GEDI index is as important as it is on the GCR. The GCR contains an implicit assumption that countries are in competition with one another; and that one country's gain is another's loss. Therefore, "if you are standing still you are falling behind". When economies are viewed from the perspective of

entrepreneurial action; and struggled most on entrepreneurial aspirations. On individual indicators, Chile scored best on new product introductions (on which it scored a perfect. 1.0); on competition, on which it scored a .93; and on globalization (.86). On the pillars, Chile scored best on product innovation (.90); cultural support (.82); and opportunity perception (.81).

Chile's primary weaknesses on individual indicators are research and development expenditures, on which it scored a .13; informal investment (.18); and the percentage of businesses active in the technology sector (.28). Looking at the pillars, Chile performs least well on process innovation (.13); risk capital (.27); and tech sector (.29). Each of these is a direct function of weakness in one of the individual indicators.

Comparing these scores with what we know about Chile from our discussion of the country's economic situation above, it is perhaps unsurprising that Chile scored well on globalization. As we will see in more detail later, Chile's performance on each of its areas of weakness would also seem to square very much with reality. It is perhaps most surprising that the country scored as well as it did on product innovation relative to process innovation. This would seem inconsistent both with Chile's status as a country transitioning from the efficiency to innovation stage (which would suggest that Chile ought to be stronger on process innovation that on product innovation, rather than vice versa); and what we know about Chile's performance on innovation in the GCR as well as its poor performance in R&D production as reflected in GEDI. It would seem doubtful that Chile is the world's leading introducer of new products.

The GEM report identified three principle weaknesses in Chile's enabling environment; R&D transfer, financial support[16] (which is to be expected, since GEDI draws on GEM indicators as inputs into part of the index), and university-private sector collaboration. In addition, the report highlighted the relatively low percentage (22.1%) of the population that perceives good opportunities to start a business; and low media attention to entrepreneurship (45.7%). Somewhat surprisingly, in spite of these factors, 87.4% of the population viewed entrepreneurship as a desirable career.

In reality, most of the weaknesses identified above are probably interrelated. One can infer that low levels of R&D spending are likely in part a function of limited university-private sector collaboration; that this is a likely driver of the limited number of technology start-ups; and

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entrepreneurship, the rank takes on a different meaning; because there is no assumption of a fixed pie to be allocated. One may perhaps be able to argue that countries are competing for capital flows; but it is unclear either that the amount of capital available for investment in the world is really fixed or that we have somehow reached a ceiling on the amount of capital for which ideas are competing. If anything, the opposite would appear to be true; there is probably more capital available than ideas worth investing in globally. (This is further complicated by the fact that venture capital, although it is a globalizing industry, remains a relatively local phenomenon; so capital flows do not naturally seek the most desirable destinations). The other element that complicates GEDI's country rank is the inexact nature of the penalty for bottleneck. Conceptually the bottleneck feature is a strong point of the index in that it takes into account binding constraints and their contribution to the suboptimal performance of a system. However, the lack of knowledge of the magnitude of the bottleneck makes the ultimate mathematical computation of the rank problematic. Therefore, GEDI's country rank is perhaps most useful as a basis for comparison against a benchmark (those countries that are the best performers) rather than in a competitive sense. The more useful features of the index, in my view, are the individual indicators rather than the aggregate score.

[16] 2011 Global Entrepreneurship Monitor, p. 11.

that less innovative start-ups may also be a driver of low levels of investment, which are not finding attractive opportunities in which to invest.[17] The limited levels of R&D may also account for GEM's finding that few Chileans perceive good business opportunities; but it is unclear why GEM's data in that regard differs so radically from GEDI's, which identifies this as a strong point. We will see later that the extent of market dominance of large firms (identified as an issue in the GCR), may also account in part for low R&D levels, as monopolistic firms typically lack the incentive to upgrade; this would presumably be related to the fact that Chile struggles on process innovation.

IV. Start-Up Chile

Inception

The origins of Start-Up Chile can be found in a visit that Vivek Wadhwa paid to Chile in 2009 at the invitation of CORFO. According to Mario Castillo, a former CORFO executive, Wadhwa had recently written about Indians who were interested in investment projects in the United States but were having difficulty obtaining visas. Castillo invited Wadhwa to Chile to discuss the ideas with Castillo and Raul Rivera, the President of the Foro Pro Innovacion[18]. According to Wadhwa, he also criticized CORFO's assertions that they would be successful in building a world-class services platform on the basis that the country would eventually suffer from increasing wages due to the country's limited number of English-speaking scientists and engineers. At the time, also according to Wadhwa, he suggested that a bottom-up approach would be more effective than the top-down approach that characterized the High-Technology Investment Promotion Program; an approach that he detailed in an article that he wrote in *BusinessWeek* magazine upon his return.[19] Castillo (who was part of the Concertacion government) subsequently announced an initiative (which was not yet known as Start-Up Chile) that included free visas and other support for Indians interested in establishing projects in Chile at a technology fair in Bangalore in 2009, while Wadhwa spread the word about the program in Silicon Valley.[20] When the current government took power, Rivera brought the idea to the Ministry of Economy and it was re-booted as Start-Up Chile.[21]

[17] We will see later that this is actually complicated. Venture capital firms in Chile have unusually high requirements for the stake they take in a company; which is part of the reason that few firms access local venture capital. However, the stringent requirements that venture capital firms have appears to also be a function of their lack of knowledge of technology ventures and their associated business models. Therefore, unwinding what is driving what is difficult.

[18] The Foro Pro Innovacion brings together institutions and people that promote innovation in Chile. Their mission is to promote innovation and entrepreneurship in the private and public sectors and universities.

[19] Wadhwa, Vivek. "The Magic Happens When You Focus on People", *Innovations* Journal, Vol. 7, No. 2, pp. 25-27.

[20] According to Castillo in an email to the author on March 15, 2013.

[21] This also according to Castillo.

Horacio Melo, currently the Executive Director of Start-Up Chile, tells his version of the story in a recent commentary in the same issue of *Innovations* Journal[22]. His recounting of the inception of Start-Up Chile begins with Nicolas Shea, a Chilean living in the United States at the time and attending Stanford, and Wadhwa. According to Melo, Shea and Wadhwa were the ones who promoted the exploitation of opportunities to encourage immigration to promote innovation and entrepreneurship in the country. In February of 2010, Shea began seeking support within the Chilean Government for his idea, and was authorized to try a pilot that would fund 23 projects; for which he received 100 applications. The program, which was run under CORFO through InnovaChile[23], the agency responsible for supporting innovation in the country, offered entrepreneurs interested in starting their business in Chile a one-year visa, $40,000 to cover expenses, free office space and connections to mentors and investors.[24] The money that is provided takes the form of seed capital; Start-Up Chile takes no equity stake in the ventures it supports. The program would be provided $15m per annum to implement the program.

Writing around the time of the program's inception, Wadhwa suggested that the logic behind the initiative was threefold: 1) some of the entrepreneurs who set up in Chile would fall in love with the country and decide to stay; 2) the simple presence of foreign entrepreneurs would teach would-be Chilean entrepreneurs about global markets; and 3) the tech community would develop more robust links with the outside world.[25]

The first round of applications to the program was accepted in early 2011. At the time, applicants were required to be either foreigners or Chileans living abroad. Applications were judged by Yoodle, a California-based consulting firm that used experts based in Silicon Valley to judge the candidates on three criteria: 1) the quality of the founding team; 2) the merits of the project; and 3) the impact it was likely to have on Chile's entrepreneurial environment.[26] InnovaChile would then have the final say. The first round (which was open only to foreigners and to Chileans living abroad) yielded 320 applications; of which 100 were selected (84 of those accepted). In July of 2011 (the second round) the Chilean government opened the program up to local Chilean entrepreneurs as well. The total number of applications doubled (to 650); with 154 accepted into the program. In the third round, held toward the end of 2011, another 570 people applied, with 100 of those accepted.

When entrepreneurs are accepted to the program, they are provided with a "visa checklist" that helps facilitate the issuance of their visa. Entrepreneurs are then paired with a local, Santiago-based businessperson, who serves as their "buddy" in what they call a *Padrino*

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[22]Melo, Horacio. "Prosperity Through Connectedness", *Innovations* Journal, Vol. 7, No. 2, pp. 19-23.

[23]InnovaChile, which was founded in 2005, was originally started using taxes imposed on copper exports. The "royalty" as it is known under the law, is 3% on export sales of copper. The idea was to use the windfall generated by high commodity prices to subsidize activities related to innovation, thereby gradually weaning the country off of its dependence on copper. http://www.bcn.cl/carpeta_temas/temas_portada.2005-10-26.2840261250

[24]Wadhwa, Vivek. "Want more startups? Learn from Chile", Bloomberg Businessweek, April 11, 2012. http://www.businessweek.com/articles/2012-04-11/want-more-startups-learn-from-chile

[25]Wadhwa, Vivek. "Chop Shop Workers and Bootstrappers: Chile Really Wants You", techcrunch.com, August 21, 2010. http://techcrunch.com/2010/08/21/chop-shop-workers-and-bootstrappers-chile-really-wants-you/

[26] "Start-Up Chile: April 2012", Harvard Business School, Case No. N9-812-158, May 1, 2012, p. 9.

(roughly, "Godfather") system. Additional assistance is provided to the entrepreneur to take care of certain administrative matters, such as opening a bank account. This is complemented by weekly workshops that focus on the kinds of support start-ups require, such as pitching. The format is heavily peer-to-peer.[27]

Results to Date and Measuring Success Going Forward

Stephen Keppel documents the program's results to date.[28] The original objective of the program was to host 1,000 entrepreneurs by 2014. As of this writing, the program appears to be on track to achieve its goal. As of October, 2012, the program had hosted 687 entrepreneurs (of over 3,800 applications received) from 35 countries, created 695 new jobs, and supported 36 deals with Chilean investors. In addition, 59% of entrepreneurs who have been through Start-up Chile now have operations in Chile. A sixth round of applications has also just been accepted, with 1,421 applicants (bringing the total applicants to more than 5,000) from 60 countries, half of which were from Latin America.

These are all, of course, only intermediate outcomes. As the program is still in its infancy, it would unfair to expect more at this time. In the long term, however, the program will be judged on more impactful measures. A recent Harvard Business School case[29] suggests that Start-Up Chile was designed to 1) change mindsets and the entrepreneurial culture in Chile; and 2) create an ecosystem that would support entrepreneurship in the country. The articulation of these goals appears to be attributed to Cristobal Undurraga, who managed the Entrepreneurship Department at CORFO when SUP got underway.

Melo suggests slightly modified, and more specific, criteria: 1) to make Chile a country that supports entrepreneurship, including the development of an ecosystem of venture capital firms and angel investors; and 2) to select one project that turns into a billion-dollar company. He makes no mention at all of mindset change; and specifically highlights the role of venture capital as key to the entrepreneurial ecosystem. In addition, his specific mention of identifying one billion-dollar company is interesting. The HBS case suggests that Undurraga was very much torn on this point; preferring to see "1,000 million-dollar projects emerge than one billion-dollar project" while also recognizing that one large project could have a powerful demonstration effect.[30]

This may represent nothing more than an evolution in the thinking of the individuals running Start-Up Chile regarding the program's objectives; but unfortunately, the slightly nuanced difference in the two responses makes it difficult to develop appropriate indicators on which the relative success of the program can be judged. In my view, the initial criteria are more consistent with what the program is likely to produce. Melo's criteria, on the other hand, present

[27] Melo, *Innovations*.
[28] Keppel, Stephen. "How a Chile Startup Initiative is Changing Latin America", ABC News, October 10, 2012. http://abcnews.go.com/ABC_Univision/News/chile-startup-initiative-changing-latin america/story?id=17446227
[29] HBS Case No. N9-812-158, p.2
[30] Ibid, pp. 13-14.

two important problems. First, it is unclear how the program, as currently structured, will drive the development of a venture capital industry. I will address this at greater length below. Second, he states that the program hopes to develop one billion-dollar project; but it is unclear whether the project must establish itself in Chile to qualify. This is another critical issue, and also part of the discussion that follows, which will deal with where Start-Up Chile has succeeded and where it falls short in its aspirations.

SUC's Successes to Date

Start-Up Chile has in many ways been enormously successful. A principle goal of the program as it was originally conceived was to spur a change in entrepreneurial mindset. Encouragingly, the 2011 GEM report indicated that 23.7% of all Chileans answered in the affirmative when asked whether they had started a business in the last three years; compared with 17% just three years earlier.[31] While it is difficult to draw attribution between the SUC initiative and these numbers, it would be surprising to find that SUC had no bearing on them.

The program has also, arguably, resulted in some fundamental advances in the Chilean entrepreneurial ecosystem. Between 2010 and September of 2012, Start-Up Chile participants held nearly 380 meetings and took part in over 1,000 workshops and conferences; this is largely a result of the expectation set by SUC that entrepreneurs that participate in the program must "give something back" by engaging with the local Chilean business community.[32]

A third important accomplishment of the program has been to put Chile on the map internationally when it comes to entrepreneurship. This has also been hugely successful. The program has been covered in numerous publications from *Forbes* to *BusinessWeek* to the *Economist;* and was the subject of a Harvard Business School Case Study. Start-ups from over 60 countries have applied to the most recent funding round; a measure of the program's global reach. A Google search for "startup Chile" provides over 8 million results. Copycat initiatives inspired by the program are pending in both Brazil and South Africa.

One interesting phenomenon has been the self-perpetuating nature of the network of entrepreneurs that have become part of SUC. Numerous SUC entrepreneurs have written or spoken out in the press about their (generally positive) experience; encouraging more individuals to apply. There is almost certainly an element of self-interest here; as the entrepreneurs going through the SUC program have a vested interest in attracting other entrepreneurs to Chile so that they can learn from and network with them.

Probability of Long-Term Impact

[31] As cited by Hernan Cheyre, Executive Vice-President of CORFO, June 15, 2012. http://www.businesschile.cl/en/news/entrevista/chile%E2%80%99s-year-entrepreneurship

[32] "The Lure of Chilecon Valley", the *Economist*, October 13, 2012.

Start-Up Chile has had some impressive accomplishments to date considering the relatively limited funds that have been dedicated to the project and taking into account, in particular, that the program has been started with no marketing budget at all. In the most optimistic scenario, the program could have a transformative effect on the mindsets and entrepreneurial culture in Chile. Given this, it is perhaps inappropriate to characterize the program's shortcomings as constituting "failure", since even moderate success could have an important long-term impact. However, to the extent that the program aspires to catalyze a complete entrepreneurial "ecosystem", there are important elements that the program does not currently address. These shortfalls are outlined below.

1. *Despite some claims to the contrary, it is difficult to suggest that Start-Up Chile is really an "accelerator" as it has sometimes claimed*. While this can be viewed as simply a matter of semantics, the truth is that the program does not currently have a true system of "mentoring" SUC entrepreneurs. The "*padrino*" system is a good idea, and certainly useful for entrepreneurs in helping them to settle into the country. However, it does not serve a true "mentoring" function in that, for the most part, the Chilean counterparts are not entrepreneurs but rather businessmen (nearly all are in fact men) who are unlikely to be able to identify with the challenges of an entrepreneur. If some of the entrepreneurs who go through SUC ultimately decide to stay in the country, it would be useful for them to serve as mentors for new SUC participants going forward.

2. *Local private capital has played no role to date*. This is critical. The SUC HBS case study presents data showing that all of the capital raised by SUC entrepreneurs through April of 2012 was from foreign funds, primarily from the US, Argentina, and Mexico.[33] As Ted Gonder points out in his otherwise positive review of SUC, venture capitalists generally prefer that recipients of their investments be locally based.[34] This would suggest that that many of SUC's entrepreneurs will depart once they have fulfilled the residency requirement. Indeed, only 15 of 83 companies in the first wave incorporated in Chile; and an even smaller percentage (13 of 130) in the second wave. There is an interesting parallel in the Nordic countries, which, as a recent Special Report in the *Economist* pointed out[35], have developed a surprisingly dynamic culture supporting entrepreneurship but have had a difficult time retaining those home-grown entrepreneurs. Gonder[36] points out that part of the reason for the lack of locally available capital in Chile is that local venture capital firms insist on a stake of as much as 60% in the companies in which they invest; this is due in part to conservatism and in part to their lack of familiarity with technology ventures and the higher risk premium that they therefore attach to investing in them.

[33] Ibid, Exhibit 7, p. 23.
[34] Gonder, Ted. "An Early Assessment of Start-Up Chile", *Innovations* Journal, vol. 7, no. 2, p. 31.
[35] "Northern Lights", an *Economist* Special Report, pp. 10-11, Feb. 2, 2013.
[36] Gonder, p. 31.

Although this weakness in the model is fairly obvious, it is more difficult to know exactly what to do about it. A few countries have tried models that used matching public funds to spur private capital; New Zealand and, particularly, Israel (through its well-known Yozma Venture Capital) had success doing so. However, this has been tried elsewhere with much less success; and it is unclear that venture capital is really the bottleneck in Chile. In Israel's case, the country was well known for its significant number of scientists and engineers and robust R&D spending; venture capital was clearly what was needed to unleash entrepreneurship there. In Chile, the binding constraint right now may in fact be a lack of good investment opportunities (good ideas), in part due to monopolistic activity (discussed at greater length below) and in part due to the country's heavy reliance on extractive industries that haven't generally required innovation to take advantage of. R&D spending in Chile, at .4%, is several times lower than the OECD average of 2.3%; neither large firms nor universities invest much in research and development activities.[37]

3. *The firms that SUC has attracted are, generally speaking, neither catalytic nor build on the country's competitive advantages*. Of the first three waves of entrepreneurs, only two were technology firms[38] and just five were in natural resource industries, such as mining, where Chile offers a competitive advantage. These numbers were dwarfed by the approximately 75 who were starting a venture in social media. Furthermore, fewer than 10 are in finance; this is one industry that could play a cross-cutting support function for other ventures.[39] One Israeli investor, who came to Chile with the intention of starting up a VC fund but departed six months after his arrival, attributed this in large part to several monopolistic families who stifle innovation in many industries (in particular extractives, which would otherwise represent prime investment targets).[40]

   One step that SUC might consider is more aggressive targeting of companies in sectors where the country clearly offers advantages to encourage them to be part of the pool of applicants to SUC. While it would probably be unwise for the government to interfere further in the actual selection of companies, active attempts could perhaps be made to fill the applicant pool with start-ups that are more likely to catalyze economic activity and transfer knowledge and technology locally. (In the long run, this would likely have to be

[37] http://www.scidev.net/en/latin-america-and-caribbean/news/chile-s-new-tax-breaks-set-to-stimulate-r-d.html

[38] It is an open question whether the presence of technology firms would actually have a catalytic effect or not, given the country's limited number of science and engineering graduates (in particular those who speak English). Interestingly, Wadhwa (correctly, in my view) identified this as a key obstacle that would blunt the impact of the earlier efforts by CORFO to spur high-technology clusters; but didn't recognize it as an issue for the SUC initiative.

[39] This data is from HBS Case No. N9-812-158, Exhibit 7, p. 21.

[40] http://thenextweb.com/la/2011/12/26/why-this-investor-abandoned-setting-up-a-startup-fund-in-chile-after-just-6-months/

combined with strengthening of Chile's anti-monopoly policy to encourage new, more innovative entrants in, particularly, the extractives sector). Start-ups for which Chile is a more logical long-term location (either because of the competitive advantages it offers or because of the markets to which it offers access, primarily those in South America) are probably also more likely to lay down roots in the country.

Will SUC last beyond its sponsoring administration?

A key, and often overlooked, aspect of any government-initiated effort is the degree to which it has achieved broad support and, therefore, the likelihood that it will survive a change of administration (particularly if that change results not just in a change of administration, which in Chile is mandated after just one term, but in a change of party). The High-Technology Investment Promotion Program, described earlier, fell victim to just this. SUC, for all of the positive publicity it has generated abroad, has sometime been criticized in Chile for using taxpayers' money to fund (largely) foreign entities. Not only do most of the start-ups not incorporate in Chile; many of the jobs being created are not for Chileans, but for foreigners who may not even reside in Chile. In other words, support for the program beyond the current administration is by no means a given.

In an attempt to assess the extent to which SUC has garnered bipartisan support, I interviewed several key members of the previous Concertacion governments of Ricardo Lagos and Michele Bachelet (who was recently elected to a second, non-consecutive term) to get their views of SUC. While there was a general consensus around the need for an impact evaluation of the program to be done before reaching any final conclusions about the success (or potential success) of Start-Up Chile, the program has generally been received with some skepticism.

I spoke first with Gonzalo Rivas, the former Executive Vice-President of CORFO from 1997-2003. After highlighting the interest the program had generated in the international press, Rivas noted that he did not believe that the "results" that the program has achieved to date are especially relevant; while acknowledging that it is difficult to know at this point without a more formal impact evaluation how successful it has in fact been. He also suggested that he felt that the any numbers related to investment of local capital are inflated by the fact that many of those funds have been channeled to local venture capital funds by the government. In the final analysis, Rivas did not believe that the program would have a significant impact on innovation in the country; although he considered valuable the program's ability to bring talented young people to Chile who can serve as examples to the Chileans and who in many cases presented projects in conjunction with locals. [41]

Carlos Alvarez, who ran the High-Technology Investment Promotion Program under the Lagos Administration and then served as Sub-Secretary of the Economy under Bachelet, had a

[41] One amusing anecdote that came from conversation with Rivas is that it turned out he was contracted by an American firm last year to serve as one of the evaluators of several of the submissions. So the Chilean government had effectively supplied an American firm with a contract for which they simply hired another Chilean; and a former official of the Opposition at that.

somewhat similar response. A caveat is necessary here, as Alvarez has spent the last two and a half years outside of the country, having taken an assignment with the OECD when the current administration took power. However, he indicated that he has been approached by a number of international specialists, both in entrepreneurship and ICTs, asking him about the program. This provides useful information about the traction that SUC has gained in terms of international recognition; it is widely considered an interesting and innovative model.

Alvarez was in full agreement with Rivas; that an impact evaluation of the program is necessary prior to any rush to judgment about its effectiveness. However, Alvarez expressed two principal concerns about the risks inherent in the design of SUC. The first is what he termed "adverse selection"; that the program becomes a magnet for entrepreneurs who have been unsuccessful in obtaining funds for their ventures in their own countries. The second is that the enterprises attracted to the program may not necessarily be attractive to the local market. As evidence of this, he pointed to the lack of interest of local venture capital in the ideas to date, something that, according to Alvarez, Hernan Cheyre (the original Executive Director of SUC) himself highlighted in a recent article.[42]

V. Conclusion

It is probably fair to say that Start-Up Chile has exceeded the expectations of its founders. Although the program is less than three years old, it has produced demonstrable results in changing the country's ecosystem, altering the entrepreneurial mindset of Chileans, and making Chile a globally recognized player in innovation and entrepreneurship. It is probably equally fair to say that there remain important missing elements in the entrepreneurial ecosystem that Start-Up Chile has been, and will be, unable to address; as they are outside of its remit. Monopolistic behavior among the country's largest firms has stifled innovation and limited the number of attractive opportunities in which to invest. The bankruptcy regime makes it difficult for entrepreneurs who fail to get back on their feet. Neither large companies nor universities are hotbeds of R&D; and are poor at cooperating with one another. Venture capital is largely absent. A dearth of successful entrepreneurs makes it difficult to create networks of mentors who can support other budding entrepreneurs in the country. Although both the strengths and limitations of the model are emerging, there is obviously a need for a robust impact assessment of the program to begin to make any kind of definitive judgment about its effectiveness. With the program entering its third year, the data collected should be adequate to begin considering such an evaluation; as the fate of some of the enterprises that entered the program, at least in the first two rounds, should begin to become clear.

[42] Conversely, it is quite possible that the opposite is true; that venture capitalists haven't rejected the enterprises, but that the enterprises have rejected the terms they would have to accept in order to access the capital (that is, as referred to earlier, that the VC firms are requesting a larger stake than they the enterprises are willing to give up). However, the issue of consistency between the entrepreneurial ideas and the advantages that Chile offers is a real one; as was highlighted earlier in the paper.

The attraction of Start-Up Chile is obvious. Cash-strapped individuals can try their ideas out at no cost and, for the adventurous, the program provides an opportunity to experience a new culture in a beautiful and geographically diverse country. The challenge confronting the program (and the country) is how to get some of these individuals to stay; and how to take advantage of the presence of the others for the 6-12 months that they spend in the country. In order to maximize the impact of SUC and other initiatives around entrepreneurship, broader reforms will be required at the microeconomic level, both in the legal and regulatory environment as well as, importantly, the education system; which currently turns out insufficient numbers of the scientists and engineers who could serve as the vehicle for the diffusion of innovations throughout the economy. The efforts of Start-Up Chile in many ways highlight both the way that government initiatives can be helpful in spurring entrepreneurship; as well as the need for public policy to address all elements of the entrepreneurship ecosystem in order to have maximum impact. While Start-Up Chile can perhaps be tweaked around the edges, it will be important for Chile to identify, and deal with, the binding constraints at the microeconomic level to assure that the efforts of Start-Up Chile are allowed to bear fruit.

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