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FELIPE VERGARA AND LUMNI:
LAUNCHING AN INNOVATION IN A DEVELOPING ECONOMY

Felipe Vergara's heart pounded in his chest as he rushed through the international terminal of the Santiago Airport in Chile. For the chief executive officer (CEO) and cofounder of Lumni, Inc., and Lumni Chile, October 3, 2002, was a day for celebration: the launch of Lumni's first human capital fund. But the 34-year-old entrepreneur had no time to celebrate. The start-up needed his continuous attention, as did Primera Languages for Business, the company he had founded a year before to support himself and to bankroll Lumni.

For Vergara, the fund's launch was the culmination of 12 months of hard work. A year before, he had met Miguel Palacios, who introduced him to what Vergara thought was a revolutionary idea for financing higher education. At the time, Palacios, a Batten Fellow at the Darden Graduate School of Business Administration at the University of Virginia, conducted research on human capital contracts (HCC), relatively unknown financial instruments that allowed students to tap their future earnings' potential to fund their college education. Palacios believed that someday HCCs would become a reality, making higher education more accessible to bright, lower-income students. Vergara, a Wharton MBA and a McKinsey alumnus with a passion for the education industry, believed he could take the innovative concept and create a sustainable system to finance higher education in developing economies, where student loans and scholarships were scarce. He persuaded Palacios to partner with him in the start-up.

In a year, the founders had managed to launch the first human capital fund in a developing economy and to raise enough money to finance six undergraduate students at the top Chilean universities. The first group of investors responded enthusiastically to the idea of investing in human capital, and expressed strong interest in committing more financial resources if the model proved itself. But Vergara did not dwell on Lumni's achievement for long. He was preoccupied with the new strategic initiatives he and Palacios had been discussing for some time. As he boarded the plane, Vergara took a deep breath. He needed the eight-hour flight from Santiago to Miami, Florida, to clarify his thoughts.

The Founders

Felipe Vergara was born in Barranquilla, Colombia. His father, Eduardo, was an entrepreneur who started several businesses, but his most successful one was a leather goods company, marketing its products mostly to customers from Europe. After the European currencies had been devalued in the 1980s, the venture struggled. Eduardo Vergara hoped that his son would avoid the ups and downs in the life of an entrepreneur and find work in a large multinational corporation, ensuring a steady stream of income.

When Vergara was two years old, his family moved to Bogotá, Colombia, where he attended the French School of Bogotá. Early on, he discovered his passion for helping others study, which, in turn, helped him grasp difficult concepts more easily. He found personal fulfillment both in tutoring others in math and science, and in the three languages he spoke fluently.

Upon graduating from the Universidad De Los Andes in Bogotá with a degree in industrial engineering, Vergara worked in France as a quality control engineer for a large cutlery manufacturing company. He then moved to Brazil to work as a logistics manager for Eximerco, a language-learning company, specializing in self-study kits. In 1994, he returned to Colombia, where he taught a class in corporate strategy at his alma mater and had a stint at an investment bank.

Despite his corporate success, however, Vergara was drawn to the world of start-up businesses. In 1994, he founded Taller de Estrategia, a consulting company that provided strategic and financial planning to small businesses. It was not long before he realized he needed an advanced degree in business and began applying to MBA programs abroad. After two years of hard work, he was admitted to the Wharton School of Business Administration at the University of Pennsylvania in the United States, where he was fascinated by the pervasive entrepreneurial spirit. To finance his education, Vergara obtained a loan from Colfuturo, a Colombian foundation that financed 100 Colombian nationals to study abroad each year.

Upon graduation from the Wharton school, Vergara was hired by McKinsey & Company, and worked as a consultant at McKinsey's New York office, and on a long-term project in France. But it was the time of the Internet boom, and Vergara felt that entrepreneurial itch again. After a year, he left McKinsey and began work on an e-learning start-up with two friends from Wharton. The company, Ulatina.com, never took off. Vergara commented: "We spent too much time working out the business plan and financing model and not enough time executing anything." Ulatina.com was a painful lesson in sound and timely implementation.

Exhausted and uncertain about his future, Vergara thought a lot about what he really wanted to do in life and what he valued most. Commitment to education and entrepreneurship had always been a central part of his life, and even though his e-learning company had failed, his passion to help others learn was stronger than ever. As Vergara said:

> For me, a turning point was when my Internet company failed, and my partners quit. I was in New York with depleted savings and no steady source of income, but I said to myself, "I really want to be an entrepreneur." This commitment has been a fundamental thing for me. I see entrepreneurship as something you do long term; it's not something you do for a year.

While he explored various possibilities for creating a new venture in the education industry, including an on-line simulation to teach entrepreneurship, Vergara took on several consulting assignments, which had a focus on education. He worked on a variety of projects, including one for his alma mater. He designed and developed a Latin American version of Knowledge@Wharton.com, the school's on-line magazine.

Since only a handful among Vergara's 700 Wharton classmates were interested in starting ventures in the education industry, the networking opportunities Vergara could leverage were limited. Luckily, in July 2001, Camilo Muñoz, one of Vergara's friends, visited the Darden school, where he met Miguel Palacios, a fellow at the Batten Institute for Entrepreneurship. Palacios' research on the innovative financial instruments called human capital contracts and various alternatives for funding higher education caught Muñoz's interest. He immediately put Vergara in touch with Palacios and the two started having long telephone conversations.

Miguel Palacios grew up in Bogotá, Colombia. His father, a prominent lawyer and economist, served as president of Colombia's central bank, as finance minister, and a member of congress. In his teens, Palacios attended a private school, Colegio Los Nogales, where students were instilled with a strong sense of Colombian culture and values, while being introduced to a global and multicultural perspective. They were encouraged to pursue excellence and to extend it to their communities. Deeply influenced by Los Nogales, Palacios returned there to teach physics, while completing his bachelor of science degree in mechanical engineering at the Universidad de Los Andes in Bogotá.

Another big influence on Palacios was a summer class in political philosophy he took in the United States at the University of Notre Dame, in South Bend, Indiana. For the first time, he began to wrestle with questions of ethics and politics, such as how to construct a just society, and what the responsibilities of the state are to its people. He realized that he really wanted "to drive some change in society."

While he pondered his future career goals, Palacios took a job in Santiago, Chile, with Sigma, a subsidiary of the Angelini Group, one of Chile's largest conglomerates. Palacios and other young professionals performed internal consulting for the conglomerate's various business activities, such as oil distribution, insurance, power utilities, and fisheries.

One day in 1997, Palacios and his coworkers were discussing the so-called "Bowie bonds," issued by British rock star David Bowie and purchased by the Prudential Insurance Company of America. Unlike traditional asset-backed bonds, Bowie bonds were backed by the royalties of the performer's current and future albums.[1] The 10-year bonds allowed Bowie to collect $55 million up front, instead of waiting for royalty checks to trickle in over the years, and paid Prudential an annualized interested rate of 7.9%. What was unique about the arrangement was the fact that it converted Bowie's future income into tradable commodities. Palacios and his colleagues were fascinated by that financial innovation. "If Bowie can use his future income to generate cash up front," Palacios wondered, "wouldn't it be great if we could do that to pay our college tuition?" The idea remained in the realm of wishful thinking, but Palacios was unable to forget it.

After almost two years at Sigma, Palacios entered the Darden school as an MBA student. While there, he took a finance class with Professor Robert Bruner. One day after class, Palacios began to chat with Bruner about the possibility of financing higher education through a Bowie bond-like instrument. The idea that one could capitalize or promise one's future income as a basis of borrowing was very appealing to Bruner; he thought it was a particularly creative application of options theory from finance to a practical problem. With Bruner's encouragement, Palacios explored the idea further as a Darden business project during his second year in the MBA program.

Soon after graduation in 2001, Palacios was awarded the fellowship at Darden's Batten Institute, which enabled him to focus on innovative financial instruments for funding higher education, including human capital contracts.

Human Capital Contracts—the Evolution of an Idea

Human capital contracts are contracts in which students agree to pay a percentage of their future earnings over a predetermined period of time in exchange for capital to finance their college education. Since the repayments are contingent upon income, students may end up paying back significantly more, or less, than what they originally received from the investors, depending on how much they make after graduation. Thus, those contracts resemble an equity investment in the future earnings of an individual. (See **Exhibit 1** for a hypothetical example of human capital financing.)

The concept behind HCCs was first introduced in 1945 by Milton Friedman, a Nobel Laureate in economics. In 1955, Friedman elaborated on his original idea and proposed the creation of a financial instrument that allowed investors to buy a share in an individual's future income. His proposal sparked discussions in the United States and the United Kingdom, which led to the creation of a new kind of debt instrument, namely income contingent loans (ICL). In the United States, several private universities including Yale, Harvard, and Duke, created ICLs,

[1] Jay Mathews, "Securities Oddity: The Bowie Bond; With Asset-Backed Debt, the Rock Star Plays a Financial Instrument," *Washington Post* (6 February 1997): C01.

but those programs were discontinued when federally funded loans became widely available in the 1970s.[2]

ICLs were not what Friedman had in mind when he envisioned using equity investments to finance higher education. It wasn't until the financial developments of the 1980s and 1990s that entrepreneurs were able to revisit Friedman's original idea.

HCCs Revisited and the Arrival of MyRichUncle

The advent of the mutual fund industry and the possibility of grouping assets and selling them in parts created an opportunity for the development and implementation of HCCs. While Friedman's original proposal involved a relationship between an investor and an individual, the new financial system allowed for a relationship between a pool of investors, clustered into the mutual funds, and a pool of students, assembled through securitization.[3] Investing in large groups lowered risk and protected investors, because each student's performance affected his or her return only marginally, and lower risk for investors meant cheaper financing for students.

In the early 1990s, the concept of equity investments in human capital gained a new champion, entrepreneur Roy Chapman. In 1996, *Forbes* published an article on Chapman and his company, Human Capital Resources, Inc., which he founded in order to create educational capital funds and encourage investors to finance higher education.[4] Faced with legal uncertainties, however, Chapman eventually abandoned his plans to create HCCs.

It took half a century and two New York based entrepreneurs to make Friedman's idea a reality. Vishal Garg and Raza Khan, the founders of Iempower, Inc., operating under the brand name MyRichUncle, launched the first human capital investment product in 2001. The company gave private investors an option to invest in students in exchange for a percentage of the students' income for a specified period after graduation.

Garg and Khan targeted select universities in the United States, and claimed that the students' overwhelming response confirmed that there was a significant market for their product. In return for the company's investment, the students who signed the contracts committed to paying anywhere from 0.1% to 0.4% of each (United States dollars) US$1,000 of their future gross income, with repayment periods of 10 to 15 years. Iempower capped the aid amounts so that no one would pay more than 15% of his or her future earnings.[5]

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[2] Miguel Palacios Lleras, *Investing in Human Capital: A Capital Markets Approach to Student Funding*, (Cambridge: Cambridge University Press, 2004): 41–47.

[3] Palacios, 48.

[4] Randall Lane, "Colsobs," *Forbes* (4 November 1996): 44.

[5] Aaron Donovan, "Education as an Investment. Really," *New York Times* (6 January 2002): 7.

The entrepreneurs not only showed that HCCs could be implemented, but they also took the first step to develop a market that gave more options to students seeking funds and investors seeking returns.

While the idea of using HCCs has advanced noticeably in the United States since Friedman first proposed it, the concept was received with mixed emotions. Its opponents denounced HCCs as a form of indentured servitude, arguing that by pledging part of their future income in exchange for equity financing, the students were indentured to the financiers.[6] The proponents of HCCs contended that HCCs were voluntary agreements between consenting adults, and thus fell under the category of free contracts. They also hailed human capital contracts' potential to create equality of opportunity by enabling students from low-income backgrounds to access higher education.

The Genesis of the Entrepreneurial Venture

Vergara was thrilled to have found an MBA student as passionate about the education industry as he was and, in October 2001, after weeks of telephone conversations, he visited Miguel Palacios at Darden. The two spent the weekend talking about the enormous need that existed in the developing economies for financing higher education. What they knew through personal experience was that the market did not satisfy that need and the burden of paying for college fell largely on the students' families. Vergara commented, "We come from Colombia where many people we knew—people who were smarter than us in high school—couldn't go to college because their parents didn't have the money."

According to Palacios, HCCs offered students an innovative way to pay for education, regardless of their parents' financial resources. "One of the most important assets young people have," explained Palacios, "is the value of their future earnings. HCCs allow those young people to trade part of the value of those earnings to finance their education." Vergara was hooked on the idea.

While Palacios' interests lay in developing the theoretical basis, both financial and ethical, for the financing of education through income-contingent financial instruments, Vergara, the entrepreneur, was itching to implement the ideas. When Palacios said he believed that someday HCCs would become a reality, Vergara replied, "Why don't we make them a reality now?" Vergara's credentials and his enthusiasm were enough to persuade Palacios, and he agreed.

A chance to give bright, lower-income students access to their future income in advance—thus preventing human capital from being squandered—was extremely appealing to Vergara. As he said:

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[6] Patricia H. Werhane, "The Ethics of Human Capital Contracts," *An Executive Briefing on Financing Human Capital*, (Charlottesville: Darden Business Publishing, 2004), 39.

> The need was clear. I knew intuitively that HCCs could meet that need; we could create a sustainable system that would allow people to go to college. I also knew that if we helped people get higher education and increase their income, we could charge a percentage of that income and make a living. I knew it was a once-in-a-lifetime opportunity.

Instead of writing a formal business plan, the founders decided to design and launch a pilot HCC fund, and if the model proved itself, scale it. While Palacios thought they should start with the fundraising process, Vergara's approach was to work on a sweat equity basis and to do as much bootstrapping as was possible. His experience with the failed e-learning venture had taught him a painful lesson. Said Vergara, "In 2000, I tried to raise money, and I didn't have a business. I've learned that we should build a business and then raise money."

In November 2001 and March 2002, the entrepreneurs met in New York, New York. Since Palacios' mind was set on a career in academia, they decided that Vergara would be the company's CEO. They also decided to call their start-up business Lumni, which is a play on the Latin word, "lumen," meaning light. The name reinforced the idea that the students financed by Lumni would become enlightened through education.

Vergara realized early on that Lumni was a long-term proposition, and that it would take years of significant investment of time and money and a variety of ways to bridge the funding gap before it became profitable. An accomplished polyglot, he decided to start a language company, offering customized programs for companies who needed to train their employees to conduct business in foreign languages. He immediately thought of Giovanna Rueda, one of his Colombian friends with a strong entrepreneurial track record, who at the time was pursuing a degree in international finance and business at Columbia University's School of International and Public Affairs in New York. In January 2002, he approached Rueda to partner with him, and Primera Languages for Business was born. At first, Vergara and Rueda gave Spanish lessons to Columbia's students. Soon after, they started developing their first corporate clients.

Sizing the market

While he was busy developing Primera, Vergara worked equally hard on Lumni. One of the initial decisions he and Palacios had to make was where to launch their first human capital fund. They believed that the need for their product existed in most countries, including the United States, and the idea could work anywhere. As Colombian citizens, they were drawn to Latin America, but they knew the region posed serious challenges to the successful implementation of HCCs. Ironically, it was the developing economies where the need for financing higher education was most pressing and where HCCs could fill a hole in the market.

After their initial research, they chose Chile to launch their pilot fund, mainly because of its stable political and economic environment. In addition, the demographics and behavior of its student population made Chile a good candidate from a collection standpoint. Moreover, the cost of higher education in Chile was relatively high compared to countries such as Brazil and

Argentina, where tuition at some of the best universities was heavily subsidized by the government. The fact that Palacios had worked in Chile and had many professional contacts there made Chile an even more attractive option to them.

Vergara's early market research indicated that Chile's higher-education system was growing fast, both in scale and cost. Moreover, while the annual market for financing tuition hovered around $800 million, funds available to students were insufficient and inefficiently allocated. Most of the financial burden of higher education fell on the students' parents, making it very hard for students from low-income families to pursue university studies. The second main source of financing was the Chilean government. In 2001, the government invested approximately $57 million in student loans and $26 million in scholarships, which enabled 35% of undergraduate students to obtain loans; that, in turn, covered only part of the tuition expenses, and 6.1% to receive scholarships.[7] Those numbers were meager in comparison with the $800 million market. What commercial banks had to offer students was limited to revolving lines of credit to finance minor expenses, or, in rare cases, part of the tuition. In addition, recipients of commercial financing had to meet certain requirements, which made that option inaccessible to lower-income students.

With a population of only 14 million, however, Chile was not a perfect market—the number of students in need of financing was smaller than it was in other countries. But Vergara and Palacios believed that if their model proved itself in Chile, they would be able to enter other markets in Latin America, the United States, and other countries. Since the performance of the test fund was critical, the founders decided to finance students from top Chilean universities.

During 2002, the founders made several trips to Chile. Since Palacios did research in the region as part of his Batten Fellowship, he was able to cover most of the expenses from his research budget. While Palacios was busy identifying potential investors in the funds, Vergara's focus was on testing market demand for Lumni's product. With the help of his Chilean friends from Wharton, Vergara recruited Gonzalo Labbe, a business administration major at Universidad Católica de Chile, who agreed to conduct market research at his alma mater. Labbe recruited two other team members, one a student at Universidad de Chile, the other a student at Universidad Adolfo Ibáñez. The students received a small fee for each survey they conducted; they also tabulated data.

Fifty percent of those surveyed at Universidad de Chile, Universidad Católica, and Universidad Adolfo Ibáñez found HCCs to be an attractive option and expressed strong interest in HCCs as an alternative method for funding their education. (The team leader, Gonzalo Labbe, ended up being funded by Lumni.)

On the investment side, the research confirmed that returns on individual students varied according to their chosen career, university, region, and social background, with certain fields

[7] Felipe Vergara, "Human Capital Contracts in a Developing Economy," *An Executive Briefing on Financing Human Capital,* (Charlottesville: Darden Business Publishing, 2004), 136.

offering generally good returns overall. For example, an engineer from a reputable Chilean university was expected to earn an equivalent of approximately US$16,000 per year, which was about four-and-a-half times what a high school graduate earned, and more than five times the annual tuition cost. (See **Exhibit 2** for higher-education expenses in Chile.) The founders believed that in addition to being a sound investment, investing in human capital funds would give investors an opportunity to do good by assisting their fellow citizens in transforming their lives.

Legal contracts

One of the most challenging parts of launching the human capital fund in Chile was the creation of a legally binding contract between the students who were receiving financing and the investors who were investing in those students' future earning potential. Again, Vergara leveraged his personal contacts to identify three Chilean lawyers who agreed to work with Lumni in exchange for equity and, in one case, for free. Vergara said:

> It opens doors when you have friends who introduce you to their friends inside the country. Our credentials also helped. The lawyers believed in what we were doing and were moved by our motivation and passion. One of them phoned me and said, "We have this problem in Chile, and we aren't solving it, and you come from another country and try to help us."

Since Lumni was introducing a completely new concept of higher education financing, one of its priorities was to make sure the students understood what HCCs were and that they were not loans. HCCs fell into the category labeled "aleatory contract" (contrato aleatorio, i.e., an investment with uncertain returns and inherent risks) by the Chilean legislation, but were still defined as a credit arrangement. Another issue was how to define the repayment period. The legal team decided that the students would pay a specified percentage of their income during the first 60 months of their post-graduation employment. If the students happened to work part-time after graduation, the number of months would increase from 60 to 120.

Another significant aspect to consider was collection. Vergara had to make sure Lumni would be able to enforce collection in the event that students defaulted on their repayment obligations. Research confirmed that credit bureaus were well developed in Chile and that young professionals were aware of the importance of maintaining a good credit record. Tax fraud was less common in Chile than in other countries in the region. To ensure students understood their obligations, they were required to sign an expensive promissory note. In case of student fraud, Lumni reserved the right to denounce the students to the credit bureau and to start a judiciary process.

Lumni's legal team had expertise in contract design and enforcement; collections of commercial and student loans; and venture capital investments. It took approximately a year to draft and refine two separate contracts. One contract, called the financing contract, was between the students and the fund management company, Lumni. The other—the fund management contract—was between investors and Lumni, Inc.

While Vergara was working with lawyers, he and Palacios simultaneously leveraged their Chilean contacts to build the Chilean board of directors. They met several wealthy, influential people, who were concerned about the increasing gap between the rich and poor in Chile, and who believed that one of the best ways to curb income disparity was to make higher education widely available. Lumni's product particularly appealed to those individuals, and some of them expressed interest in supporting the start-up.

Student selection and fund design

While the contracts were being fine-tuned, Vergara, with the help of Labbe and Palacios, was busy with the student selection process. In choosing candidates for financing, the founders' strategy was to serve niche markets—they targeted students majoring in business administration, economics, and industrial engineering.

Vergara used various approaches to identify potential candidates. He talked to financial aid officers, class presidents, and the deans at the three of his target universities. Then, he sent e-mails to some groups of students and had brochures for the others. The surveys his three-person student team had conducted to test-market the demand were also helpful in identifying candidates.

Out of a pool of qualified applicants, they selected approximately 15 candidates. Then, using both quantitative and qualitative information, Vergara and Palacios went through every application. They looked closely at grades as well as previous work experience, internships, tuition costs, and anticipated future earnings, based on school and program. In addition to professional and academic potential, Vergara's main criterion was students' integrity, which he gauged through detailed interviews. After plugging the relevant information into the complex stochastic financial models developed by Palacios as part of his Darden business project, the founders offered to finance six students.

Based on their analysis, Vergara and Palacios designed Lumni's first fund to finance undergraduate students at Universidad de Chile, Universidad Católica, and Universidad Adolfo Ibáñez, which were highly regarded universities in the marketplace. All students—business majors, economists, and industrial engineers—were no more than 24 months away from graduating. The fund was structured as a for-profit to finance 50% of the last year's tuition. The candidates to be financed committed to pay approximately 3.4% of their income (the percentage was different for every student) for 60 months of work after graduation.

Raising money

Initially, the founders agreed to follow Vergara's approach and bootstrap their business. Besides forgoing salaries, Vergara and Palacios funded initial expenses out of pocket. They also used volunteers and the sweat equity approach to get the work done. Once the pilot fund was designed and the students preselected, however, Palacios and Vergara needed to raise capital for the human capital fund and began the fundraising process for Lumni Chile. Their list of prospects included family members, friends, and other private investors they identified through personal and professional contacts.

In June of 2002, the entrepreneurs did a marketing presentation to Angelini Group's top executives, including Palacios' former boss, Patricio Tapia, the chief financial officer (CFO) of one of the holding companies. The six people they targeted responded enthusiastically to the idea of investing in human capital and committed enough money to launch a pilot fund to finance six students, with each student receiving the equivalent of US$1,500 at the time. The projected return on Lumni's first fund was 12% in real terms, but what appealed to the investors was the combination of financial and social return. The fact that they were helping bright, young people who needed money to complete their education was a big factor in their decision. Vergara commented, "When the investors saw the students' credentials, it was impossible for them to say no."

Growth Opportunities

In October 2002, Felipe Vergara had some important decisions to make:

- With the pilot fund up and running, should he continue with Lumni's initial strategy and scale the model across the other markets in Latin America and elsewhere? With no funding for the holding company in sight, was Lumni's geographical expansion viable? Vergara and some volunteers he had recruited through personal contact were making inroads into Colombia, Peru, Brazil, and Mexico. Vergara was already experiencing the challenges of managing volunteers, who tended to lose interest and drive after the initial enthusiasm for the venture had subsided. Should he pull the plug on Lumni's entry into other Latin American markets and focus on Chile? Even if the volunteers in other countries continued to work for equity, the challenges of managing a geographically dispersed company would remain.
- Vergara was poised for the next step. Should he grow Lumni organically, from 6 to 30 students; from 30 to 80; from 80 to 150, etc., or should they shoot much higher initially? One idea he and Palacios were considering was to target Chile's 50 wealthiest people for their second Chilean fund, this time to finance 500 students. Even if Vergara succeeded in raising an equivalent of $3 million (in U.S. dollars), did Lumni have enough management capability to successfully run such a large fund, while continuously developing and fine-tuning its systems and processes? Palacios, Lumni's cofounder and board member and the brains behind the product, was considering scaling down his involvement with the company and was applying to PhD programs, intending to enter one in the fall of 2003.

- From the start, Vergara was deeply involved in all aspects of the business. He codesigned and managed the pilot fund; worked on the systems and processes; interviewed and selected potential candidates for funding; and worked with lawyers on legal contracts. Moreover, Vergara's other entrepreneurial pursuit, Primera Languages for Business, which was his main source of income, was growing, and balancing work between the two start-ups was increasingly challenging. In October 2002, the fledgling Lumni Chile had only one fund manager. The question on Vergara's mind was: How should he go about building a strong management team?
- While he tried to address those pressing questions, Vergara didn't lose sight of the big picture. Lumni's vision was to revolutionize the way education was financed globally by creating an efficient, large-scale, merit-based market. How would Lumni achieve that?

Exhibit 1

FELIPE VERGARA AND LUMNI:
LAUNCHING AN INNOVATION IN A DEVELOPING ECONOMY

Example of Human Capital Financing

Year	*1*	*2*	*3*	*4*
Amount ($) (1)	5,000	6,000	8,000	7,000
% of income per $1,000 (2)	.55	.50	.45	.40
% of income committed [(1)/1,000 × (2)]	2.75	3	3.6	2.8
Accumulated committed % of income	2.75	5.75	9.35	12.15

Assume that John enters a four-year college. His financial needs, after considering other financing sources, are shown in the table above. In this example, investors expect to receive a percentage of John's income during 15 years of employment after graduation. The percentage of income per $1,000 dollars provided for John's particular field of study is also shown in the table. If John ends up financing the amount he needs through HCCs, he will commit 2.75%, 3.0%, 3.6%, and 2.8% of his future income in his first, second, third, and fourth years respectively.

After graduation, John will owe 12.15% of his income for the next 15 years to the investors who provided the capital. If upon graduation he earns an annual salary of $25,000, he will owe $3,037 per year to the investors.[1] If, on the other hand, he earns an annual salary of $40,000, he will owe $4,860 annually.

[1] Palacios, 55–56.

Exhibit 2

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Chile: Higher Education Expenses Borne by Parents and Students
First Degree, Academic Year 1999–2000
(national currency converted to U.S. dollars by 1999 purchasing power parity of US$1 = CLP190.10 [Chilean pesos])

		Public			
		Low Public	***Moderate Public***	***High Public***	***Moderate Private***
	Special one-time or up-front fees	CLP20,000 US$105	CLP30,000 US$158	CLP40,000 US$210	CLP50,000 US$263
Instructional Expenses	Tuition	CLP850,000 US$4,470	CLP 1,040,000 US$5,471	CLP1,350,000 US$7,102	CLP1,600,000 US$8,417
	Other fees	n.a.	n.a.	n.a.	n.a.
	Books & other educational expenses	CLP60,000 US$316	CLP80,000 US$421	CLP 100,000 US$526	CLP 130,000 US$684
	Subtotal expenses of instruction	CLP930,000 US$4,891	CLP1,150,000 US$6,050	CLP1,490,000 US$7,838	CLP1,780,000 US$9,364
Student Living Expenses	Lodging	0	CLP300,000 US$1,578	CLP800,000 US$4,208	CLP800,000 US$4,208
	Food	CLP120,000 US$631	CLP200,000 US$1,052	CLP250,000 US$1,315	CLP250,000 US$1,315
	Transportation	CLP50,000 US$263	CLP70,000 US$368	CLP90,000 US$473	CLP90,000 US$473
	Other personal expenses	CLP100,000 US$526	CLP130,000 US$684	CLP150,000 US$789	CLP150,000 US$789
	Subtotal expenses of student living	CLP270,000 US$1,420	CLP700,000 US$3,682	CLP1,290,000 US$6,785	CLP1,290,000 US$6,785
	Total Cost to Parent & Student	CLP1,200,000 US$6,311	CLP1,850,000 US$9,732	CLP2,780,000 US$14,623	CLP3,070,000 US$16,149

Source: http://www.gse.buffalo.edu/org/inthigheredfinance/

Low Public: typical community college tuition, living at home with parents. *Moderate Public*: moderate public tuition, living in dormitory or shared apartment. *High Public*: high public tuition, living as an independent adult. *Moderate Private*: low private tuition, living as an independent adult.