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Thank you for inviting me to be with you here today. I not only get to share the first meal of the day with you, but to share some economic data that I hope will perk you up as much as this morning's coffee.

Your LSBC brand is "Growing BC's Bio-Economy." That's an aspiration that we share.

We share so much more, of course, and as partners, we are making a huge difference to our province, our nation and – because what we do best always has global implications – our world.

A little history. It's customary for a university president to commission an economic impact study of his or her institution every decade or so. The point is generally to reassure government funders that their investment is being stewarded wisely.

About a year ago, I saw that UBC's last study was coming up to its best-before date, so I spoke with economist Walter Sudmant, Director of UBC's

Planning and Institutional Research division, and commissioned a new study. But the document he handed me at the end of a year's work was not an update of the previous study. It was a whole new animal.

Sudmant used a formula developed by economist Fernand Martin to measure Canadian university R&D at a national level, and which had so far been applied institutionally only by the University of California. So the report I held in my hands included something that had never before figured into a Canadian university impact study: the economic impact of *new knowledge* created at UBC.

I was stunned. For the first time, we could consider—and *measure*—not just the economic impact of UBC's corollary activities as an employer and a purchaser, but also the impact of our core business: higher education and knowledge creation. The idea is revolutionary. Moreover, the numbers are astonishing. They indicate that UBC is not merely an economic player, but a driver, and that the magnitude of impact occurs not in spite of the University's core business but *because* of it.

The economic impact study of the University of British Columbia that we did last year shows that UBC's measurable contribution to the economy of the Province of British Columbia in the previous year was ten billion, fifty-seven million dollars—or roughly five percent of the provincial economy. By way of a benchmark, that's above Mining, and Oil & Gas Extraction and just below Construction. By way of another benchmark, provincial funding for UBC for this time period was roughly one billion dollars. So what we're looking at for 2008/2009 is a government spending multiplier ... *of 10*.

What's even more radical than that multiplier *number*, though, is the *character* of the multiplier as it's applied to the University's core business. It's this factor that changed my view of UBC's economic role and will, I hope, change yours.

I'd like to walk you briefly through the key components of the formula that led to that ten-billion-dollar result. And then what I really want to focus on is the last: research.

So the formula. The 2009 study measured the following dimensions of economic impact:

First, UBC's direct spending in the local economy—salaries, books, capital spending. Using a standard, conservative multiplier—in other words, a Keynesian multiplier—of 1.5, the impact of direct spending was \$1.9 billion.

Second, non-university spending that would not have occurred without UBC's presence, including student and visitor spending. Again using a standard multiplier of 1.5, indirect spending totaled \$618 million.

Third, the effect of higher earnings. Full-time workers with bachelor's degrees earn 57 percent more than those who have not completed university. What's more, UBC produces *all* BC-trained doctors, dentists, physical therapists, pharmacists and midwives, and about three quarters of all BC-trained engineers and other professionals, so the 57 percent differential is conservative for UBC graduates. Netting out the actual cost of education, the impact of increased income for UBC alumni was \$2.6 billion.

That puts us at five billion and some millions—and we still have one more category to go, and it’s one that will have direct relevance to LSBC members and the innovation impacts that you are bringing to our economy:

Research. The creation of new knowledge. Ideas and innovations that become part of the curriculum, or part of the vernacular, in classrooms, communities, and corporations from that point forward. The creation and transmission of new knowledge increases the productive capacity of the region and nation, and in doing so, *it fundamentally alters the very nature of the economy*. The standard Keynesian multiplier just does not apply.

So instead, we used Fernand Martin’s formula. Here’s why. It’s long been observed that there is a substantial component of economic growth that cannot be explained by growth in inputs. Labour and capital both have become more productive for reasons not accounted for. Evidence shows that this additional productivity is the result of innovation, or “technical change,” resulting from the research and development of new products and processes. The effect of innovation is not static but rather dynamic, in

that a new communications technology or a viral gene sequence fundamentally alters the *way* things are done. Moreover, the productivity contributions of knowledge are not single-year effects, but become permanent sources of GDP either until that knowledge is supplanted by new knowledge, or in perpetuity. And finally, research and development in British Columbia is conducted to a disproportionately high degree by UBC.

When all of these factors are accounted for, the impact of UBC research and development—core University business—on the British Columbia economy is \$4.96 billion.

The characteristics that have led us to become one of the top-ranked universities in the world are in fact the same characteristics that have led us to become an economic driver for British Columbia. An outstanding innovation record. Students, staff, and faculty who could go anywhere in the world but *choose* UBC. And the exceptional quality of our research.

Let's take a closer look.

A top-tier, research-intensive university—and particularly UBC—is necessary to the strength and success of a regional economy by virtue of three key characteristics:

1. We are an *impetus for the innovation* that drives productivity growth in British Columbia and Canada;
2. We help create a provincial climate and *geography of innovation* that attracts the world's top talent; and
3. Our core contributions to the economy are not static but dynamic inputs, or *innovation inputs*, the impact of which continues over time.

Impetus for innovation. Geography of innovation. And innovation inputs. Let's start by looking at the Impetus for Innovation.

Timothy Lane, Deputy Governor of the Bank of Canada, has quoted Peter Nicholson of the Council of Canadian Academies saying, "innovation is ... the main driver of productivity growth and is thus the principal source of national prosperity." Calling innovation an *economic* rather than a purely scientific activity, he then said, "Canada has a serious productivity growth

problem” and commented on the fact that “Canada’s business sector on the whole ... is lagging in innovation relative to many of our peer[s].” He called on businesses to put in place the strategies that would allow them to foster innovation.

Closer to home, the BC Technology Industry Association has called on industry and government to create a joint strategy for the technology sector that includes a healthy innovation pipeline and ecosystem.

The World Bank’s 2009 report on establishing world-class universities called for a national innovation system that could translate research into society-ready products and services efficiently and competitively.

And in the forthright words of *New York Times* columnist Thomas Friedman, “We might be able to stimulate our way back to stability, but we can only invent our way back to prosperity. We need everyone at every level to get smarter.”

That's a lot of powerful voices in a lot of places calling for much the same thing. Let me tell you about the impetus UBC is providing in answer.

Thirty-seven percent of all research and development in British Columbia takes place in universities and almost entirely in the four research-intensive universities: UBC, Simon Fraser, UVic and UNBC. But fully *seventy* percent of university research takes place at UBC. That means UBC is responsible for over a quarter of all research in the province. Compare that with the University of California, where only *seven* percent of R&D in California takes place at all of the U of C campuses combined. BC is highly dependent on UBC as the leading conduit for the injection of innovation into the economy, and Canada as a whole is far more reliant on its universities than is the US.

Canadian *industry* doesn't have the research power enjoyed by American firms, but Canadian *universities* do. Over \$40 million in research activity at UBC is contracted, and directly funded, each year by private sector firms that are using UBC as their research arm.

UBC stands among the top 10 universities in *North America* in terms of the 'patent pipeline,' a sophisticated measure of commercialization of research. At \$13.6 million at last count, UBC licensing revenue exceeded all other Canadian universities by a wide margin; Calgary was next at \$4.9 million. BC's biotech cluster is made up of about 100 companies employing 2,600 people, and is the seventh largest in North America. It is primarily spun out of UBC. UBC currently ranks 23rd in science and engineering publications in North America, and with the highest publications growth rate of any university in North America, is fast climbing that list.

I said a few minutes ago that I want you to see UBC with new eyes. UBC as an **impetus for innovation** in partnership with BC business is one of the reasons why.

Economists are paying considerable attention to the effects of creativity, authenticity, well-being, and diversity on the long-term economic health of companies *and* countries. Moreover, economists such as Nobel Laureates Joseph Stiglitz and Amartya Sen as well as UBC's own John Helliwell are

redefining what we mean by long-term economic prosperity and how we measure it. Stiglitz says we must add measures of happiness, health, and well-being to our traditional consideration of GDP. Helliwell has proven the link between happiness, and productivity and profitability. Even more relevant for today is that Helliwell and others have demonstrated clear causal links between *education* and happiness.

Dave Mowat, CEO of ATB Financial and former CEO of Vancity Credit Union, has said, “You can draw a direct, straight-line relationship [from happy people] to the financial success of your company.” I’m drawing another straight line: from UBC’s core business to well-being and happiness, in our regional economy and beyond.

Economist Richard Florida shows a clear correlation between the presence of a talented “creative class,” the strength of a region’s technology sector, and the region’s overall economic success. He focuses on the ability to attract talent, saying, “Smart people are the most critical resource to any economy By attracting [the smartest people from around the world] and rapidly and widely disseminating the knowledge they create, universities

will have a much greater effect on the nation's economy as well as regional growth."

So what's the secret to attracting talent? How do you keep people happy?

Because I agree -- patents and licensing fees are all very well, but it's estimated that *73 percent* of new knowledge generated by university research is transmitted into the economy *through its graduates*. Which means we need smart people here in BC who are happy to stay.

Helliwell says it's things like trust; strong networks with family, friends, and community; and freedom from discrimination. Florida flips this last around, saying that successful places are those that *encourage* diversity, "plug-and-play communities where anyone can fit in quickly ..., find opportunity, build support structures, be themselves, and not get stuck in any one identity."

He adds that while a solid business climate will always be important, "having an effective people climate is even more essential."

It's no coincidence that UBC's new strategic plan names an exceptional learning environment as its overarching goal, with sustainability, inter-

cultural understanding, and an outstanding work environment among the key strategies aimed at achieving it. As the province's largest university and second-largest employer, **UBC as a place** helps define **BC as a place** for an enormous number of people. UBC's new brand, which you may have begun to see in some creative new video spots on your favourite news channel, captures this idea of a geography of innovation in its tagline: *a place of mind*. We want to communicate here at home, throughout BC, and around the world, that UBC is a place where every student, staff and faculty member, alumnus, and community member can learn, discover, and contribute in his or her own way. In class, in the community, online, or from wherever you may be in the world. Even ... *from here*.

Impetus for innovation. Geography of innovation, or a place of mind. And last but not least, innovation inputs. On this, I'd like to share some stories with you.

Story #1: Pulp Non-Fiction

BC's 78 mechanical pulp refiners consume 11 percent of the total energy produced in the province. An interdisciplinary team of seven UBC

researchers along with a consortium of companies that includes BC Hydro and Catalyst Paper launched a \$2 million, five-year energy efficiency program to develop technologies aimed at improving production and paper quality while reducing energy consumption. Projected annual savings are \$45 million, or a thousand gigawatt hours, enough to power 100,000 homes for a year.

Story #2: Drugs Without Borders

On the inspiration of a wonderful UBC student who has gone on to become a Rhodes Scholar, UBC's University-Industry Liaison Office has developed a Global Access Policy that makes UBC-patented discoveries, including medicines, more accessible in developing countries. In one example, local company iCo Therapeutics Inc. has partnered with the University to advance a new, non-toxic formulation for the treatment of leishmaniasis. In the developing world, this infection attacks two million cancer and AIDS patients a year, and the old drug is difficult to access and highly toxic. UBC's commercialization agreement with iCo ensures that the new formula will make its way in the world to where it is needed most, at an affordable cost.

Story #3: 612 Main

Not far from here, at the corner of Main and Keefer Streets, UBC's Learning Exchange storefront offers basic and advanced computer skills classes to residents of the downtown eastside. The program is sponsored by HSBC Bank Canada, as is the ESL Conversation Program, where many of those same residents in turn become volunteer instructors helping new immigrants acquire the skills *they* need to find work and build a life in BC. Maybe even a life in Life Sciences

Innovation inputs are those that *change* the underlying nature of the economy from the moment of discovery forward. They're the currency of the knowledge economy, and they're core business for the research-intensive university. Innovation is what UBC and its sister research-intensive universities do. And by all accounts, innovation is what our economy – and your members -- need most.

Thank you for listening to *me* this morning. Now I'd like to listen to *you* – your comments and your questions, please.