EXHIBIT 12
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HB 2

The Heckman Equation

Invest in early childhood development:
Reduce deficits, strengthen Montana's economy.

James J. Heckman is the Henry Schultz Distinguished Service Professor of Economics at The University of Chicago, a Nobel Laureate in Economics and an expert in the economics of human development.

Those seeking to reduce deficits and strengthen the economy should make significant investments in early childhood education.

Professor Heckman's ground-breaking work with a consortium of economists, psychologists, statisticians and neuroscientists shows that early childhood development directly influences economic, health and social outcomes for individuals and society. Adverse early environments create deficits in skills and abilities that drive down productivity and increase social costs—thereby adding to financial deficits borne by the public.

Early childhood development drives success in school and life.

A critical time to shape productivity is from birth to age five, when the brain develops rapidly to build the foundation of cognitive and character skills necessary for success in school, health, career and life. Early childhood education fosters cognitive skills along with attentiveness, motivation, self-control and sociability—the character skills that turn knowledge into know-how and people into productive citizens.

Investing in early childhood education for at-risk children is an effective strategy for reducing social costs.

Every child needs effective early childhood supports—and at-risk children from disadvantaged environments are least likely to get them. They come from families who lack the education, social and economic resources to provide the early developmental stimulation that is so helpful for success in school, college, career and life. Poor health, dropout rates, poverty and crime—Montana can address these problems and substantially reduce their costs to taxpayers by investing in developmental opportunities for at-risk children.

Investing in early childhood education is a cost-effective strategy for promoting economic growth.

Our economic future depends on providing the tools for upward mobility and building a highly educated, skilled workforce. Early childhood education is the most efficient way to accomplish these goals:

- Professor Heckman's analysis of the Perry Preschool program shows a 7% to 10% per year return on investment based on increased school and career achievement as well as reduced costs in remedial education, health and criminal justice system expenditures.
- It is very likely that many other early childhood programs are equally effective. Analysts of the Chicago Child-Parent Center study estimated $48,000 in benefits to the public per child from a half-day public preschool for at-risk children. Participants at age 20 were estimated to be more likely to have finished high school—and were less likely to have been held back, need remedial help or have been arrested. The estimated return on investment was $7 for every dollar invested.[1]
- Investing in early childhood education to increase high school graduation rates would boost Montana's economy. For example, a 5% increase in male high school graduation rates is estimated to save Montana $11 million[2] in annual incarceration costs and crime-related expenditures. If that same 5% not only graduated but went on to college at the same rate as typical male high school graduates, their average earnings would accrue an additional $9 million annually[2]. If just one year's high school dropouts could be converted to high school graduates, Montana households would have an additional $800 million[3] in accumulated wealth over the lifetime of the students from the graduating class.

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[1]National Institute for Early Childhood Education Research
[2]http://www.all4ed.org/files/archive/publications/SavingFutures.pdf
[3]http://www.all4ed.org/files/archive/publications/HighCost.pdf

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Make greater investments in young children to see greater returns in education, health and productivity.

Keep these principles in mind to make efficient and effective public investments that reduce deficits and strengthen the economy:

- **Investing in early childhood education is a cost-effective strategy—even during a budget crisis.** Deficit reduction will only come from wiser investment of public and private dollars. Data show that one of the most effective strategies for economic growth is investing in the developmental growth of at-risk young children. Short-term costs are more than offset by the immediate and long-term benefits through reduction in the need for special education and remediation, better health outcomes, reduced need for social services, lower criminal justice costs and increased self-sufficiency and productivity among families.

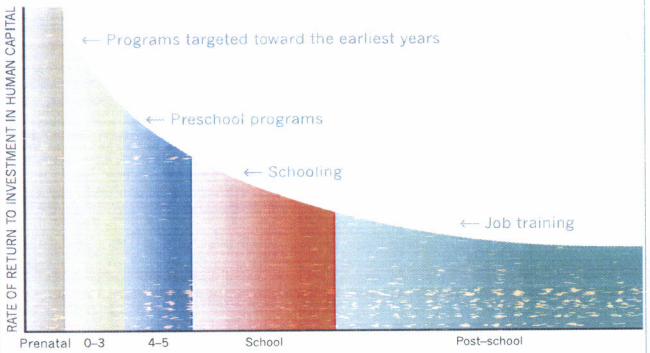
- **Prioritize investment in quality early childhood education for at-risk children.** All families are under increasing strain; disadvantaged families are strained to the limit. They have fewer resources to invest in effective early development. Without resources such as "parent-coaching" and early childhood education programs, many at-risk children miss the developmental growth that is the foundation for success. They will suffer for the rest of their lives—and all of us will pay the price in higher social costs and declining economic fortunes.

- **Develop cognitive AND character skills early. Invest in the "whole child."** Effective early childhood education packages cognitive skills with character skills such as attentiveness, impulse control, persistence and teamwork. Together, cognition and character drive education, career and life success—with character development often being the most important factor.

- **Provide developmental resources to children AND their families.** Direct investment in the child's early development is complemented by investment in parents and family environments. Quality early childhood education from birth to age five, coupled with parent-coaching, such as home visitation programs for parents and teen mothers, has proven to be effective and warrants more investment.

- **Invest, develop and sustain to produce gain.** Invest in developmental resources for at-risk children. Develop their cognitive and character skills from birth to age five, when it matters most. Sustain gains in early development with effective education through to adulthood. Gain more capable, productive and valuable citizens who pay dividends to Montana for generations to come.

Returns to a Unit Dollar Invested



Heckman, James J. (2008). "Schools, Skills and Synapses," *Economic Inquiry*, 46(3): 289-324

Early childhood education is an efficient and effective investment for economic and workforce development. The earlier the investment, the greater the return on investment.

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Heckman
The economics of human potential.