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Entrepreneurial Finance Revising the Finance 101 Course

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Abstract

A summary review of the business finance course syllabi of eight institutions is presented. Then one other typical syllabus for the financial management of the firm was examined in detail. A review of the CDR model (Capitalism, Democracy and Rule of law) and its implications are explored in consideration of the finance courses. Traditional business education pedagogy is analyzed as well as the information theory of finance to put in context the need of some improvement. Information theory is introduced as a measure of uncertainty, because it is more dynamic and general than variance in the data. The syllabi tend to overlook the need for an understanding of capital and all its sources, collaboration for research and development, and entrepreneurship. The objective of the paper is to make suggestions for modifying current syllabi to correct these shortcomings. A brief explanation of the CDR model and the effect in the gross domestic product is presented in the appendix.

Keywords: Finance; Entrepreneurship; Capitalist; Capitalism; Democracy; Rule of Law

1. Introduction

Entrepreneurship is the process of starting a business, typically a startup company offering an innovative product, process or service (see also Schumpeter, 1911, 1928, 1954). The typical financial management of the firm course has as its objective to introduce students to the organization and practices of corporate finance. Topics include the history of markets, time value of money, investment, financing, dividends, and security evaluation. All this from the

perspective of the financial operations manager. But there is no discussion of entrepreneurship and the true source of capital. In this paper we make suggestions for improving an example syllabus. The paper is organized as follows. A review of traditional finance courses is given next. This is followed by suggestions to revise and incorporate entrepreneurship into a contemporary course. We make some concluding remarks regarding the correction of existing shortcomings. A brief explanation of economic growth and gross domestic product is presented in the appendix. A glossary is given at the end of the paper to help students understand various terminologies used in entrepreneurial economics and law, particularly the elements of the CDR index.

2. Literature Review

2.1 Capital

Money, wealth, and property are often confused. The following disambiguation (this section) is excerpted from Ridley (2020a, b). The true source of wealth is entrepreneurial capital. Capital comprises intangible exogenous human entrepreneurial capital ideas of imagination and creativity, and capital stock of knowledge (skills and memory), and tangible endogenous machinery, recordings, computers, etc. Capitalism is a method of organizing capital for the purpose of profitable investment. Rule of law is an intangible exogenous catalyst that creates stability for attracting capital. Democracy is an intangible exogenous catalyst that creates new pathways for the optimal deployment of capital. Total capital is converted into production of capital stock, goods and services, which after consumption, depreciation and obsolescence, contributes to wealth. Since capital stock is subject to continuing depreciation and obsolescence, entrepreneurship must be the true source of new wealth creation. The CDR index (see appendix) is a weighted average of capitalism (C), democracy (D) and rule of law (R) that jointly with natural resources and geography explain almost all economic growth. High CDR countries are where ideas go to fly. Low CDR countries are where ideas go to die. Money is a method for keeping track of wealth. It is not in itself wealth. Money is used as a measure of level of finance.

About ten percent of the people in the world are rich and getting richer (Pew Research Center, 2015). About ninety percent of the people in the world are impecunious, living on two to three U.S. dollars per day. Any country that practices forced labor must destroy human capital, the only source of wealth. In a linear system that calls for force to perform work, a man that is twice as strong as another man can convert twice as much capital into wealth contribution. But, neither one of them creates wealth as the source of wealth is human capital (not human labor). So, any stolen wealth is not associated with labor. The stolen wealth is the devaluation of the human capital of the human being. This is potentially harmful to the psyche and self-efficacy of future descendants for generations. This epigenetic transgenerational sequela is worse and is especially harmful if left untreated (Weber-Stadlbauer, 2017). The result is a suppression of human capital. Nevertheless, England was a former colony of Rome and after independence their economy declined as they rejected successful Roman traditions, just because they were those of the former colonizer. Eventually, they got over it and rose to colonize one fifth of the world. Singapore and Hong Kong were former colonies of England.

They chose to maintain, adopt, and improve upon English economic methodology. Today, Singapore is the world's richest per capita gdp country with Hong Kong not far behind. Now that Hong Kong has been taken over by China, and democracy abolished, their good fortune will soon end. Examples of other successful former colonies are the Unites States of America, Bermuda, Cayman Islands, Chile, Botswana, Canada, South Korea, Poland, etc. One purpose of an entrepreneurial finance course is to create awareness of these political economics and their relevance to capital. Another purpose is to focus attention on the characteristics of new startup capital.

2.2 Collaboration

For many firms involved in wholesale and retail trade, their incomes are derived from the exchange of goods or services for money. Money is used to make purchases. In that case Adams Smith's (1776) ideas on division of labor, trade and exchange are applicable. The parties are involved in cooperation. It is their individual goals and economic gains that they have in mind. Yet all parties benefit from the trades. The result is ordinary economic growth. The typical finance course addresses these money needs as a financial operation of sources and uses of funds. Financing may be based on collateral in the form of plant and equipment. But there are many creative business activities such as research and development that produce new products and processes, and they require collaboration (not cooperation). Collaboration requires shared goals and rewards between employees and collaborating business partners. Collaboration results in extraordinary economic growth. Financing of creative collaboration tends to be overlooked. They are not reflected in the curriculum. In this paper we suggest that the student be introduced to this as a concept in financing. The related capital is human ideas of imagination and creativity.

2.3 Entrepreneurship: Information Theory of Finance

Entropy, a concept derived from information theory, can be applied to finance (Zhou et al, 2013). See also, Gilder (2013) on entropy and entrepreneurship. This concept is applied in portfolio selection and stock valuation. Zhou's paper reviews some other elements such as The Shannon Entropy, Tsallis Entropy, Kullback cross-entropy, Fuzzy entropy, and others. Shannon (1948) is the father of information theory. See also Shannon and Weaver (1949). The most important concept in information theory is Shannon's Entropy. Shannon's entropy measures the uncertainty contained in a message as opposed to the portion of the message that is determined (or predictable). Entropy quantifies the extent to which data are spread out over their possible values. Tsallis (1988, 2009) entropy is a generalization of the Shannon's entropy to the case where entropy is nonextensive. See also Tsekouras and Tsallis (2005). Kullback (1959, 1987) cross-entropy is a measure of how one probability distribution is different from another. See also Kullback and Leibler (1951). Fuzzy entropy gives a measure of ambiguity. This is significant in decision making applications where the variables are imprecise. For example, the fuzzy concept of the youngness of different populations of different countries, can be determined through fuzzy entropy.

These concepts are used in finance as a measure of uncertainty, because they are more dynamic and general than variance in the data. They are also independent of the distribution

of the data. Information theory has also been used for accounting for groups of companies (Pendlebury, 1980). He questioned the usefulness of aggregated data due to the loss of important individual information. Modeling financial data for decision making based on risk and information theory was presented by Dedu and Toma (2015). They provided computational results on the use of some criteria for portfolio selection combining a risk measure approach and information theory. Entropy tends to be overlooked in the curriculum. In this paper we suggest that the student be introduced to entrepreneurship, entropy and information theory.

3. Traditional Business Finance Pedagogy

Most business finance courses concentrate on the elements: a) Basic accounting, b) Net present value, and c) Stock valuation.

Basic accounting is concerned with the basic elements of accounting. Basic accounting comprises the three fundamental elements of assets, liabilities and equity. These elements are required for the construction of financial reports such as balance sheets, ledgers, and other means used by accountants to maintain financial records for businesses, corporations and individuals. Basic accountancy skills are required for running a successful enterprise. Basic accountancy skills give startups and growing small businesses the ability to develop reliable, thorough and current financial records. These provide a picture of how the company is performing. The fundamental principles of accounting comprise the monetary unit, going concern, conservatism, and cost. Accounting requires that all values to be recorded in terms of a single monetary unit. Unlike human beings who can and will die, accountants assume that a company is a going concern. The company has an external existence. Once formed it can only cease by deliberate dissolution. Conservativism requires accounts to hope for the best and plan for the worst. In case of more than one set of possibilities, they are required to state the lowest income and the highest cost.

Net present value is the sum of all projected cashflows over an entity's lifetime, the cashflow in each time period being discounted back to present value, and less the initial payment. This recognizes that money has a time value. Net present value is deterministic, assumed to be known exactly, without randomness. Therefore, no entropy. This runs counter to experiences of entrepreneurs. The cash flows ends when the entity is fully depreciated even though the company lives on. The purpose of the net present value is to compare two or more competing entities with unequal life, on an equitable time basis. It is used to select the entity that maximizes shareholder wealth.

Stock valuation is concerned with the determination of the true value of a stock. It can be estimated by the sum of the discounted future values of a stock. This may be more or less than the current value that the stock is traded at. Once again, the future values are assumed to determined exactly, free of entropy. Not the entrepreneurs experience.

The syllabi from 8 educational institutions were analyzed. Two of them are case based, designed to add some reality to the academic process. Table 1 depicts the contents of the business finance courses from some online and on campus programs.

Table 1. Examples of business finance course syllabi

Institution	Principal topics	Case based	Reference (course web page)
Harvard Business School online	1. Financial analysis 2. Finance vs accounting 3. Capital markets 4. Creating value 5. Valuation 6. Capital allocation	Yes	1)
The University of Texas at Austin	1. Introduction to corporate finance 2. Interest rate and bond valuation 3. Net present value 4. Stock valuation 5. Capital investment decisions 6. Risk analysis 7. Capital structure	Yes	2)
Loyola University Chicago	1. Financial management 2. Financial ratio analysis 3. Time value of money 4. Bonds and their valuation 5. Stock valuation 6. Capital budgeting 7. Risk analysis 8. Cost of capital	No	3)

The University of new southern wales	1. Introduction to financial statement analysis 2. The law of one price 3. Time value of money 4. Capital asset pricing 5. Cost of capital 6. Risk and return 7. Capital structure 8. Stock valuation	No	4)
Tunxis Community College	1. Introduction to financial management 2. Valuation of financial assets 3. Investing in long term assets 4. Capital structure 5. Working capital management	No	5)
College of Charleston	1. Introduction to financial management 2. Financial Statements 3. Net present value 4. Capital investment decisions 5. Risk and return 6. Leverage and Capital structure	No	6)
National University	1. Differentiate finance from economics and accounting 2. Interpret stakeholder's reports 3. Time value of money 4. Capital Budgeting	No	7)

	5. Working Capital		
University of Texas at Dallas	1. Introduction to game theory 2. Corporate governance 3. Liquidity and risk management 4. Corporate finance 5. Credit rationing	No	8)

These course syllabi were taken from the respective institution web pages listed in the reference section below. Most programs place emphasis on the analysis of financial ratios, time value of money and investment. But there is little, or no attention paid to entrepreneurship knowledge or acumen. In case studies, a real situation is described to students who are asked to come up with a suggested solution. Typically, there is not a unique solution. Students can simulate role playing as if in the real situation. Sometimes the exercise comprises only fictitious, made up, data. In that case the data and solution are hypothetical.

4. Discussion and Results: A Modern Finance Pedagogy

The 'financial management of the firm' course taught at Florida State University was used to illustrate our entrepreneurship revisions. The proposed changes are given in Table 2.

Table 2. Revising the finance 101 course

Traditional Topics	***Proposed Topics***	**Rationale for change/addition/removal**
Corporate structure, financial decision-making, goal and financial management, financial markets.	No change	
Financial view of accounting statements, cash flow, sources and uses of cash.	Financial view of accounting statements, cash flow, sources and uses of cash. *Financing of research and development.*	Research and development requires collaboration and financing where the related capital is human ideas of imagination and creativity.

Future value & compounding, present value & discounting.	No change	
Multiple cash flow, annuities, perpetuities, APR & EAR. Loans & loan amortization.	No change	
Debt: Bond features, bond ratings, type of bonds, bond-values & yield, interest rate risk, interest rates, inflation, term structure, setting bond coupons.	No change	
Stock features, preferred stocks, stock valuation & required return.	Stock features, preferred stocks, Stock valuation & required return. *Relationship between bond interest rate and stock prices.*	To understand how the stock market works, it is necessary to study the impact of changes of the interest rate on stock prices. C (including entrepreneurial capital) in the CDR model is capital measured by total market capitalization. That is, the discounted value of all stock prices on account of the GDP obtained from the investment of said capital. The interest rate is a tool used by the Federal Reserve to control inflation, the monetary offer, and stock prices.
Capital budgeting, net present value, profitability index, payback period, discounted cashflow, IRR, crossover rate.	No change	
Project cash flow, sunk cost, opportunity cost,	Project cash flow, sunk cost, opportunity cost, operating cash	Entrepreneurial behavior is aimed at creating value and must include a holistic business vision. Failure to include this in

operating cash flow, net working capital, depreciation, tax shield, salvage value, evaluation of cost cutting projects and projects with different lives.	flow, net working capital, depreciation, tax shield, salvage value, evaluation of cost cutting projects and projects with different lives. *Demand analysis and forecasting. A project plan must include demand and supply analysis, competition assessment, and business model.*	the financial analysis, will produce misleading results.
Risk, scenario analysis, sensitivity analysis, breakeven analysis.	No change	
Returns, arithmetic and geometric averages, risk premium, variability of returns.	Returns, arithmetic and geometric averages, risk premium, variability of returns. *Information theory of capital and measures of risk.*	The information theory of capitalism is revolutionizing our world.
Expected returns, variance, announcements and news, efficient markets hypothesis, diversification, risk & beta, security market line, capital asset pricing model.	No change	
Cost of equity, cost of debt, weighted average cost of	No change	

capital, flotation cost.		
Capital structure, leverage, M&M theory, static theory of optimal capital structure, pecking order theory.	No change	
Dividend policy, stock repurchases, stock dividends and splits.	No change	
Financial & ratio analysis.	*Change position in syllabus*	These topics should be moved near the beginning of the course, just after 'accounting review,' because financial ratios analysis is a powerful tool to assess the health of the firm.

5. Concluding Remarks

This paper has shown that the content of finance courses as taught in some colleges and universities, may be improved by introducing students to entrepreneurship and the potential of creativity in the creation of wealth. Most courses concentrate on financial ratios, time value of money and investment, with no emphasis on how that knowledge must be used to generate long term wealth. We propose some key elements for inclusion in such courses: a) Holistic vision in project planning and market analysis; b) Relationship between stock prices and monetary policy of central banks; c) Information theory of capital and risk measures. Finance must be studied from the perspective of the value of resource allocation for wealth creation. Students have to learn how to raise money from diverse sources, including venture capital, the process of public stock offering, and financial institutions. They have to develop some soft skills such as how to deal with skepticism towards business and financial plans, and the growth process of start-up firms.

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Courses content webpages (referenced in Table 1)

1) https://online.hbs.edu/courses/leading-with-finance/?c1=GAW_SE_NW&source=INTL_FNCE&&cr2=search__-__nw__-__international__-__leading_with_finance&kw=corporate_finance_courses_brd&cr5=517952279939&cr7=c&hsa_cam=1396947323&hsa_grp=116737570730&hsa_mt=b&hsa_src=g&hsa_ad=517952279939&hsa_acc={792-723-8641}&hsa_net=adwords&hsa_kw=corporate%20finance%20courses&hsa_tgt=kwd-46627030&hsa_ver=3&gclid=EAIaIQobChMI_LKYsKSY9QIVqilMCh15ZwboEAAYASAAEgIzEvD_BwE#syllabus

2) https://www.mccombs.utexas.edu/~/media/files/msb/departments/finance/syllabi/spring%202017/fin%20357%20-%20business%20finance%20-%20miller%20-%2003415-03430-03450-03465.pdf

3) https://www.luc.edu/media/lucedu/rome/syllabipdfs/fall2019syllabi/FINC_301_Pollon_F19.pdf

4) https://www.business.unsw.edu.au/Programs-Courses-Site/Courseoutlines/FINS1613_Business_Finance_1A_S12012.PDF.pdf

5) https://www.tunxis.edu/wp-content/uploads/2019/08/Principles-of-Finance-14-26.pdf

6) https://sb.cofc.edu/academics/academicdepartments/finance/syllabi/spring-2015/finc-303-008-spring-2015.pdf

7) https://www.nu.edu/ourprograms/college-of-professional-studies/accounting-finance-economics/courses/fin310/

8) https://personal.utdallas.edu/~nina.baranchuk/Fin7310/Syllabus.htm

Glossary

Active learning	Engages students in the process of learning through activities and/or discussion in class, as opposed to passively listening to an expert. It emphasizes higher order thinking and often involves group activity.
Capital (source)	See human capital.
Capitalist	One who deploys one's personal capital so as to maximize one's benefit.
Capital stock	Fixed installed capital less depreciation and obsolescence plus skills and knowledge acquired from entrepreneurs and taught to others.
Capitalism	Mechanism for the collection and assembly of capital.
Catalysis	The creation of alternative pathways to enable a process.
CDR index	The vector inner product (dot product) of the global constant [1.53 0.14 0.23 -1.21] and the country [*C D R C·D·R*].
Collaboration	The plan and execution thereof by participants for their intentional mutual benefit of shared goals, objectives, and rewards.
Company	The instrument of capitalism for the profitable investment of capital.
Cooperation	A plan and execution thereof by participants, each with their own personal self-interest and economic gain in mind yet yielding unintended mutual benefits.
Democracy	Private work force idea participation and periodic election of public representatives (catalyst for the process of generating *G* from capital).
Economic development	The improvement in infrastructure and social wellbeing.
Economic growth	The improvement in per capita real gross domestic product adjusted for purchasing power parity.
Endogenous	Generated from within a system.
Entrepreneurship	The process of starting a business, typically a startup company offering an innovative product, process or service.
Exogenous	Generated from outside a system.
Gross domestic product	The monetary value of all the finished goods and services produced within a country's borders in a specific time period (economic growth = change in GDP).
Growth in Wealth	Gross domestic product less consumption, depreciation and obsolescence.
Human capital	Capital human ideas of imagination and creativity and skill (not including physical corporeal labor).
Human labor	Physical corporeal labor (not including capital human ideas of imagination and creativity or skill).
Intelligence	The ability to acquire and apply knowledge and skills.
Lecture	The continuous exposition by an instructor while student activity is limited to taking notes and/or asking occasional and unprompted questions of the instructor.
Limited liability	Limitation of loss to capital invested.
Natural resources rents	Surplus value of natural resources after all costs and normal returns are accounted for.
Normal distribution	A distribution containing a most frequently occurring typical score at its peak (center) and atypical scores with lower and lower frequency as they occur further and further away from the mean.
Property rights	Property is a legal expression of an economically meaningful consensus by people about assets, how they should be held, used and exchanged.
Rule of Law	Reverse of corruption (protection of shareholder and other property rights) (catalyst for the attraction of capital).
Shareholder	An owner of shares in a company.
Virtue	Self-governing human property that promotes fairness and justice without the need for central government.

Appendix

The Source and Mechanism of Wealth

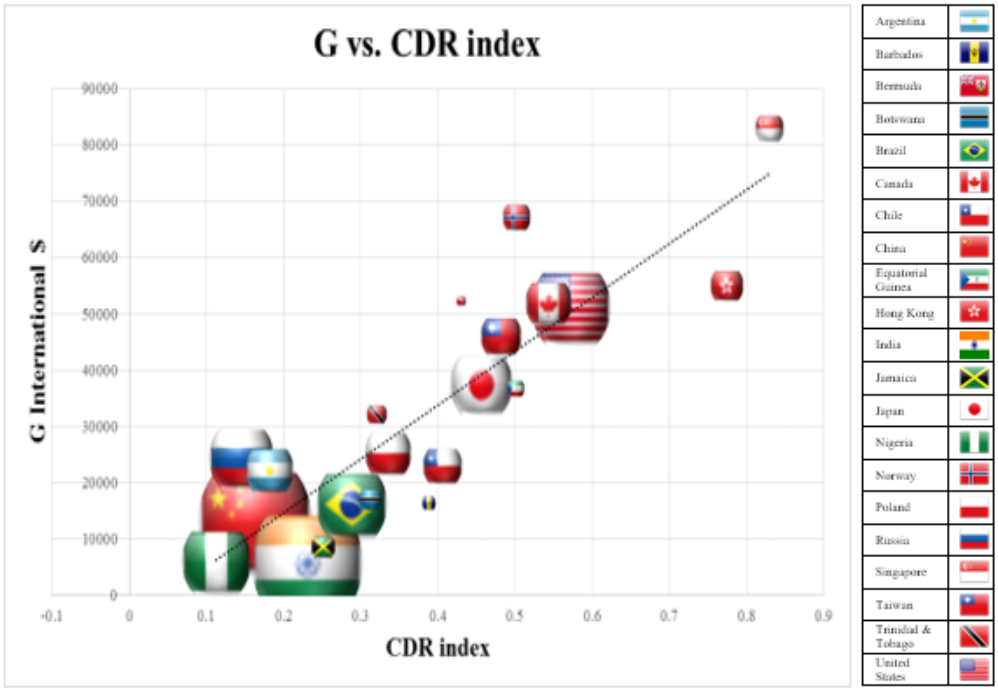

Figure 2. Year 2014 G vs CDR Index for 79 countries (line). Bubble size (21 countries) is the square root of population. This model was re-estimated for panel data and individually for years 1995-2016 with similar results.

Standardized g model

The ordinary least squares *g* model is specified as follows:

$$g = \beta_0 + \beta_C C + \beta_D D + \beta_R R + \beta_{CDR} C \cdot D \cdot R + \beta_N N + \varepsilon$$

where, the intercept β_0 and the coefficients β_C,β_D, β_R, β_{CDR},β_N are all dimensionless,

ε is a random, normally distributed error with a mean of zero and constant standard deviation,

and where all model variables are standardized as follows:

$$g = \frac{G - \text{lowest } G}{\text{highest } G - \text{lowest } G}$$

G= per capita real gross domestic product per capita (PPP)

$$\text{C(Capitalism)} = \frac{\text{per capita capitalization} - \text{lowest per capita capitalization}}{\text{highest per capita capitalization} - \text{lowest per capita capitalization}}$$

$$\text{D(Democracy)} = \frac{\text{lowest democracy rank} - \text{democracy rank}}{\text{lowest democracy rank} - \text{highest democracy rank}}$$

$$\text{R(Rule of law)} = \frac{\text{lowest corruption rank} - \text{corruption rank}}{\text{lowest corruption rank} - \text{highest corruption rank}}$$

$$\text{N(Naturalresources)} = \frac{\text{per capita total natural resource rents} - \text{lowest per capita total natural resource rents}}{\text{highest per capita total natural resource rents} - \text{lowest per capita total natural resource rents}}$$

These transformations standardize the variables and ensures upper and lower bounds on $0 \leq g,C,D,R,CDR,N \leq 1$.

Democracy and corruption are rank ordered, where the highest = 1 and the lowest = the number of countries. *G* is measured in $/capita/year.

$$\hat{g} = 1.53C + 0.14D + 0.23R - 1.21C{\cdot}D{\cdot}R + 0.38N$$

t= (6.60) (1.69) (2.60) (4.40) (5.59) F ratio = 81

Partial correlations (contributions to R^2_{adj}):

59% 5% 10% 3% 6% R^2_{adj} = 83%

where ^ denotes estimated or fitted value and *G* can be estimated from

$\hat{G} = \hat{g}$ (highest *G*-lowest *G*) + lowest *G*.

Highest *G*=83,066. Lowest *G*=1,112.

The CDRindex = 1.53C + 0.14D + 0.23R - 1.21C·D·R comprises positive C, D and R effects and a negative component due to friction from democracy that reduces G from what it might otherwise be if there were perfect agreement amongst decision contributors. The contribution from N is negligible and can be dropped from the model.