An Introduction to the Supply Chain Management Literature in Accounting

Purpose

1. Introduce UMSL Non-Accounting Faculty to the Supply Chain Literature in Accounting
2. Introduce UMSL Accounting Non-Cost Faculty to the Supply Chain Literature in Accounting
3. Introduce UMSL Doctoral Students to the Supply Chain Literature in Accounting
4. Provoke paper and dissertation ideas for doctoral students
5. Provoke thought on joint papers with accounting faculty and non-accounting faculty and doctoral students

Important Caveat

- I know (nearly) nothing about this literature
- Consider me the provocateur for discussion today
- I AM NOT THE EXPERT IN HERE!

Accounting / Finance Research Faculty

Debbie McBride (Cost Accounting)

- Cost expertise will be valuable to most topics we discuss

Steve Moehrle, Jennifer Reynolds-Moehrle, Pamela Stuerke, Jen Wen (Financial Empirical)

- Strong or weak supply chains have implications that will be reflected in the financial statements and stock prices

Greg Geisler and Michele Meckfessel (Income Taxes)

- Lots of transfer pricing tax implications

Finance Colleagues (Financial empirical)
Overview

- Introduce the strategic cost management literature
  - Structural cost management
  - Executional cost management

- Introduce the transfer pricing literature

Evolution of Cost Management Research

Cost Management in the last decades of the 20th Century

- Emphasis on improvement WITHIN the firm
- Reengineering internal processes for efficiency
  - Just-in-time inventory
  - Lean production
- Reengineering internal processes for effectiveness
  - Six sigma quality initiatives
  - Team production

Focus in the 21st Century

- Emphasis on improvement EXTERNALLY (the supply chain)
- Value of purchased materials and services per dollar sales has increased
- Shank and Govindarajan (1992 and 1994) foresaw the trend and challenged firms to increase focus on the supply chain
- Firms now managing complex supply chains (Trebilcock 2007)
  - Global suppliers
  - Contract manufacturers
  - Company-owned service centers
  - Third party logistics providers
  - Network of transportation providers
- Manage costs throughout the value chain
- Manage risks in the supply chain
Strategic Cost Management

- The deliberate alignment of a firm’s resources and associated cost structure with long-term strategy and short-term tactics (Anderson 2007)
- Managers have long sought cost management enhancements within the firm
- Increasingly, they are seeking synergies across the supply chain
  - Reconfiguring firm boundaries
  - Relocating resources
  - Reengineering processes
  - Reevaluating product and service offerings in relation to customer requirements

Two Components of Strategic Cost Management (Shank and Govindarajan, 1992 and 1994)

1. Structural Cost Drivers and Structural Cost Management
   - Organizational structure, investments decisions, and the operating leverage of the firm
   - To manage structural cost drivers: Choose an organizational design, product design, and process design to create a supply chain cost structure to meet the market demand.

2. Executional Cost Drivers and Management of the Executional Costs
   - The effectiveness and the efficiency of the execution of the chosen cost management strategy
   - To minimize the executional costs we must monitor and optimize the processes
     - To monitor: Employ measurement and analysis tools to evaluate supply chain performance
       - Variance analysis
       - Cost driver analysis
       - Supplier scorecards
**STRUCTURAL COST MANAGEMENT**

- Structural cost drivers related to the organizational structure, investment decisions, and the operating leverage of the firm
- The structure defines the “playing field” for strategic cost management
- Decisions included in structural cost management
  - Decision to produce inputs and/or seek an external supplier
  - Selecting external suppliers
  - Designing the buyer/seller relationship

**Selecting External Suppliers**

- Similar to the personnel hiring decisions where the company assesses the job requirements and the candidate’s ability to supply those skills
- Assess the candidate supplier
- Choose the most cost efficient of the candidates that meet the ability threshold

**Designing the Buyer/Supplier Relationship**

- Developing contractual management controls to reduce risk of non-performance or ineffective performance
  - Specify authority for supply decisions
  - Specify performance requirements (e.g., delivery time and quality)
  - Specify rewards for performance
  - Specify penalties for non-performance

**Sourcing: Make, Buy, or Partner**

- Key component of structural cost management (the playing field)
- Decision to execute the production activities internally or outsource (Geyskens et al. 2006)
- Transaction cost economics (Williamson 1985) used to explain organizational design choices
Transaction Cost Economics

- Significant theory underlying supply chain research
- Firms choices reflect efforts to minimize production and transaction costs
- Production costs are a function of production technology and production efficiency
- Firms may differ in their ability to produce efficiently because
  - Technological differences
  - Economies of scale differences
  - Operating efficiency differences

Does the firm have the information required to make this decision?

- Buyer’s cost accounting records should indicate internal sourcing cost
- Compare this with external supplier prices

Transaction Costs Incurred in Outsourcing

- Cost of searching for partners
- Cost of negotiating contracts
- Costs of monitoring and enforcing agreements
- Costs of dispute resolution
Risks in Outsourcing (Das and Teng 2001)

- Relational risk
  - The risk that supplier will engage in opportunistic behavior
  - Example relates to investments necessary for the agreement that create assets that have no value outside of the partnership (Williamson 1991)
    - Specialized equipment
    - Human assets (specialized knowledge, experience, training)
    - Intangible assets (brand name)
    - Physical property (shared location for JIT production)
  - Such investments can get the buyer and/or supplier “locked-in” to the relationship
    - The cost of changing is too high even though the relationship is suboptimal and the other party knows it
    - This can hinder efficient adaptation to changing environment

- Performance risk
  - Activities that cause execution of the strategy to fail
  - Vast majority of managers believe this risk has increased substantially
  - Three most significant performance risks (O’Keefe 2004)
    - Supply chain disruption (supplier failure, logistics failure, natural disaster, geopolitical event)
    - Weak senior leadership in supply chain management
    - Absence of accurate, timely supplier performance measures

Are there positives to the Outsourced Supplier? (Ring and Van de Ven 1992; Das and Teng 2001)

- Unique competencies
- Unique assets

Risk Assessment of External Suppliers (Anderson 2008)

- Domain of control functions of accounting
- Reviewed and assessed by internal audit
- SOX requires buyers to assess the controls of significant external suppliers! (RESEARCH OP)
- We accountants set up the controls really well to minimize risk!
- We DO NOT measure the residual risk well
- Research and consulting opportunity *****
  - Exception is foreign currency risk (they do this)
Single Supplier or Multiple Suppliers?

- Single suppliers common when
  - Number of qualified suppliers is limited
  - We want only the BEST
  - Supplier will have a big learning curve

- Advantages of sole supplier
  - Reduced coordination costs
  - Less quality variance

- Advantages of multiple suppliers
  - Reduced hazards of depending on single supplier
  - Ability to compare supplier performance
  - Ability to capitalize on unique strengths of suppliers

Cost Accounting has not kept up

- Cost accountants have not extended their expertise to capture all relevant costs of the supply chain (Anderson et al. 2008)
- Cost accountants are capturing production costs
- Cost accountants are not capturing transaction costs adequately
- Cost accountants are not adequately involved in the risk management process
- Supply chains are a key risk for most firms
- Cost accountants need to quantify these costs to add them to the supplier’s price (RESEARCH OP)

The Target Costing Literature and Research Opportunities

- Target costing and value engineering enable the design of a low-cost product that still offers a fair rate of return to the supplier and the buyer
- Target costing and value engineering are also a vehicle for identifying which supply chain partner has a competitive advantage in performing particular tasks
- Ansari et al. (2007) identify areas that require additional research
  - The organizational context in which target costing emerges and thrives
  - The linkages between target costing practices and other tools and processes of design
  - The diffusion and institutionalization of target costing
  - Studies of how companies in cultures other than Japan achieve the aims of target costing
EXECUTIONAL COST MANAGEMENT

- The efficiency and effectiveness of executing the strategic cost strategy

- Increasing the effectiveness with which supply chains provide low-cost, high-quality products and services with speed and reliability
  - Includes assessing transaction-level performance
  - Includes assessing relationship-level performance
  - Includes assessing the sustainability of the supply partnership

- Two major components of executional cost management
  - Measuring, evaluating, and improving supply chain transactions and relationships
  - Assessing supplier health and the long-term sustainability of supply relationships
    - Is this still the best supplier given changes in the environment

Executional Cost Management

- Measuring performance
- Monitoring performance
- Improving performance via data use

Measuring Performance:

Procurement Specialist: Get a price that is stable and low

Manufacturing Manager: Reliable delivery of high quality inventory
Supply Transactions: Accounting Weaknesses in Financial Performance Measurement

- The purchase price that the procurement team is evaluated on is an incomplete cost
  - It excludes hidden costs like inventory stock-outs
  - Carr and Ittner (1992) discuss “total cost of ownership” that attempts to capture hidden costs
  - Anderson and Dekker (2009 p. 294-295) identify research opportunities associated with determining “total cost of ownership”
    - How “total cost of ownership” information developed by buyers is used by suppliers
    - Comparing buyers “total cost of ownership” calculations with the suppliers “cost of customers” calculations to determine whether the perspectives of buyers (total cost of ownership) and suppliers (cost of customers) yield convergent solutions for optimizing value chains
    - Investigating ways firms define “total cost of ownership” to incorporate opportunity costs and to reflect residual risk and uncertainties that may affect both level and volatility of cost for a supplier

Supply Transactions: Nonfinancial Performance Measurement

- On-time delivery
- Inventory accuracy
- Quality
- Risk in the supply chain
- Anderson and Dekker (2009 p. 296) identify questions associated with such nonfinancial supplier performance measures

Other questions

- How do firms manage the feedback between evaluating transactions and interactions with suppliers and the structural cost management decisions sourcing, supplier selection, and product and process design?
- Are buyer/supplier budgets and negotiations subject to the same hazards as the internal budgeting process (e.g., budgetary slack and ratcheting)?
- For researchers with IS expertise – a host of questions exist related to system comparability and integration, management for structured access, and the influence of system design on decision making (Anderson and Dekker p. 298)
Assessing the Sustainability of Supply Chains

- Problems with the supplier can break the supply chain
- Evaluating supplier health
  - Under SOX public firms must discuss significant supplier/distributor risks and other third party risks
  - Question: Is compliance under SOX associated with fewer risk realizations?
  - Question: Is compliance under SOX associated with improved supplier performance?
  - Question: Can we assess supplier health and understand how buyers combine these assessments with measures of transaction and relationship performance to reach an overall assessment of supplier and supply chain risk?
**Multinational Transfer Pricing**

**Background**

- Probably the most heated debates I witnessed in the real world with clients related to transfer pricing and cost allocation
- Cecchini 2013 literature review in Journal of Accounting Literature
- The transfer price charged for goods and services transferred from division to division (or entity to entity in joint venture)
- For vertically integrated organizations consisting of decentralized autonomous entities
- Important coordination procedure
- Must choose the price that is in the best interest of the organization and the individual entities in the value chain
- Price MUST satisfy the regulatory requirements of host countries when foreign divisions are involved
- 2007 survey by EY identified transfer pricing as one of the most important problems facing multi-national entities

**Objectives of Transfer Pricing Decisions**

- Can involve multiple objectives
- Maximization of global profits
- Minimization of global taxes
- Equitable division of entity profits to reward and motivate entity managers
- Preservation of entity autonomy
- Reduction of risks related to economic, geopolitical, currency, and other concerns
- Minimization of government intervention and compliance with operational constraints

**Theories for Understanding Transfer Pricing Decisions**

- Transaction Cost Economics
  - Focuses on a contractual view of governance
  - Minimize transactions costs and risks
  - Does not consider other organizational and relational control mechanisms

- Resource-based View of the Entity
  - Focuses on the strategic benefits of cooperation among entities
  - Value chains can be structured to create value from pooling of resources and capabilities
Determining Transfer Price – Theoretically

- **Arms-length Principle**
  - What would the price be if this were an arm’s length transaction?
  - Requires a market for the good or service
- **Comparable Uncontrollable Price** (Harris and Sansing 1998 and Sansing 1999 studied these)
- **Cost Plus Method**
  - Papers have compared various forms for optimality (e.g., Sahay 2003)
- **Resale Price Method**
- **Profit Split Method**
- **Transactional Net Margin Method**

Factors Impacting Transfer Price from Transaction Cost Economics Perspective

- The nature of the value chain for each product line or entity
  - Pricing procedures rely on arms-length comparable information
  - Comparable information can be difficult to obtain
- Accounting policies (e.g., depreciation method) can impact the price
- Cost structure can impact price (fixed cost versus variable cost)
- **Nature of the Market**
  - Efficiently operating (Arm’s length principle works)
  - Virtually non-existent (use one of the other theories)
- **Environmental Factors**
  - Credit risk
  - Currency fluctuations
  - Interest rates
  - Business risks
  - Economic conditions
  - Size of market
  - Retail or wholesale market
  - Nature of property transferred
  - Tax policies
    - See for example Smith 2002a on income shifting in the value chain for tax purposes
    - Tax rates
- Governance structures
- Relative bargaining position
- Degree of dependence

SEE THE TCE LITERATURE SUMMARY (CECCHINI 2013, 37-39)
Consequences of the Transfer Price from a Transaction Cost Economics Perspective

- Distribution of firm income among the entities
- Decision to buy / sell internally
- Motivation of entity managers
  - Suboptimal decisions can be observed
- Transaction costs
  - Sub-optimal decisions
  - Opportunism
  - Probability of costly government intervention
  - Controls can mitigate this risk (RESEARCH!)
Factors impacting transfer price from a Resource-Based Perspective

- Nature of the value chain
  - Efficiency at each link in the value chain increases the value of the firm
  - Sub-optimality decreases the value of the firm
  - Consider for example a structure whereby transfer pricing makes a unit in the supply chain a cost center rather than a profit center – management at the “cost center” may behave differently
  - Also firms can create unique barriers to entry via outstanding value chain structure

- Regulatory Environment
  - Regulatory environments can make it difficult to operate in a certain place
  - Firms can choose a partner for example because they are in that jurisdiction

- See Resource-based view antecedent literature (Cecchini et al. 2013, p. 42)

Consequences of Transfer Pricing from a Resource-Based View

- Maximizing long-term value is not always the same as maximizing short-term profits
- Transfer pricing can impact by promoting optimal resource location and/or allocation
  - The profits of individual entities within the value chain determine the long-term viability of the chain
- Transfer pricing can impact the motivation of managers
  - Agency theory – employees will work harder if they stand to gain a portion of profits
- Tax policies important
  - Could cause suboptimal location of assets
- Transfer pricing policy can impact value chain coordination
- See consequence literature summary (Cecchini et al. 2013, p. 43-45)
Some Areas for Inquiry

- Efficiency and Effectiveness of Supply Chain as reflected in financial statements and stock prices
  - Much data availability in Compustat, CRSP, SOX disclosures and other databases
  - Identify remaining risk
  - Enhanced information about supplier and distributor performance from the existing accounting data
    - Accountants do not know the context well enough
  - Better identification of transaction costs in supply chains
  - QUANTIFY residual risk in supply chains
  - Does the stock price reflect residual risk in supply chains?
  - Refined total cost of ownership
  - Refined total cost of customer
  - Analysis of total cost of ownership vis a vis total cost of customer

- Sarbanes-Oxley Impact on Supply Chains
  - Ripe!!
  - See internet
  - Questions galore
  - Data availability is huge

- Transfer Pricing
  - Many questions
  - Data availability is large

- Contagion Effects
  - Do a company’s bonds bring a higher price ceteris paribus with strong supply chain partners and ample publicly available data?
  - Do a company’s bonds bring a higher price ceteris paribus if the lead analyst and/or the lead underwriter also serve the role for key supply chain partners (informational advantages)
  - Do auditors reduce fees for supply chain partners?
  - Do auditors issue more/less going concern opinions when they have key supply chain partners as clients
  - Are there more/less restatements when auditors audit key partners in a supply chain
  - How do stock prices react to significant news from supply chain partners (S-8)
Synopsis of select transfer pricing papers (from Cecchini et al. 2013):


The paper examines the impact of distortions wrought by transfer pricing when a firm is engaged in both internal production and external procurement of inputs. Using a Cournot model, the paper shows that the presence of an external supplier introduces a delicate interaction. Forced to pay more than marginal cost for the internal good, a downstream division exhibits dampened enthusiasm to produce, which in turn, seeps over to the supplier’s pricing. Recognizing that the procuring party is increasingly wary of high prices, the supplier’s best response is to curtail price markups so as to induce greater demand.


This paper analyzes a simple transfer pricing using an incomplete contract cost-based model. Two cost-plus methods are investigated: the multiplicative method and the additive method. The paper shows that the additive model is optimal among the class of cost-plus methods. Because under a multiplicative markup the selling division’s income is proportional to the production cost, its manager has less incentive to invest and control costs effectively. In contrast, additive markups motivate the selling division to increase the number of units transferred. Because higher transfer levels are facilitated by lower cost (the buying division’s demand increases as the cost declines), the seller has an incentive to reduce the cost.


The papers shows analytically that ex post shifting of transfer prices may have positive effects on the production profits of the multi-national entity. This finding is in contrast to previous literature, which finds that ex post transfer price shifting is merely used to enhance profits based on tax minimization. The key finding is that ex post shifting may affect manufacturing costs, thus distorting manufacturing decisions ex ante. These decisions can potentially be beneficial to the firm. Two OECD accepted transfer pricing structures are tested, the comparable profit method and the comparable uncontrolled price method. Smith finds that the more discretion a firm has over its transfer pricing regime, the more efficiently the firm invests in manufacturing capabilities.

This paper develops economic models to analyze the tradeoffs between tax minimization and managerial incentives. The models focus on the incentive systems of the subsidiaries as well as the income-shifting that takes place in order to minimize taxes. The analysis describes the decisions as ex ante income shifting (managerial incentive of the subsidiary) and ex post income shifting (allocation of realized income to lower tax jurisdictions). The results show that the interaction between tax rates and incentives can produce surprising results. Given a differential change in the tax rates of the related entities, the firm may actually lower the transfer price of a subsidiary to induce lower effort but still gain in overall profit.


This paper analyzes the effects of using the comparable uncontrolled price method (an accepted arm’s length transfer pricing method). The authors use analytical economics, and find that the comparable uncontrolled price method allocates more income to the subsidiary, even when the price used is the price at which the product can be sold to an unrelated buyer. This can lead to distortions in production decisions. The authors further explain that using prices that arise between independent parties to allocate income within a multi-national entity is a flawed approach because it ignores the economic forces that caused the firms to choose their organizational structure.


Through a series of proofs, the authors examine three cost-based transfer pricing regimes. They assume that there is symmetric information at the trading stage and that specific investments of the individual divisions are protected. They find that: (a) centralized standard-cost transfer pricing dominates other methods if the ex ante costs uncertainty is sufficiently low; (b) reported standard-cost transfer price dominates if the ex ante cost uncertainty is sufficiently high and the buyer does not obtain sufficient cost information at the trading stage; (c) actual cost-based transfer pricing becomes the superior method if ex ante cost uncertainty is sufficiently high and the buyer is well informed about the supplier’s costs.

The paper undertakes a performance comparison of two commonly used schemes: negotiated and cost-based transfer pricing using an analytical model. In the model, transfer pricing has two major purposes: to guide intrafirm transfers of an intermediate product and to create incentives for divisional managers to make relationship-specific investments. Investments can take the form of research and development, machinery and equipment, or personnel training. In the one-period model investments entail an upfront fixed cost and a subsequent reduction in the unit variable cost incurred by the supplying division. Alternatively, investments by the buying division may enhance net revenues obtained from internal transactions. The divisional incentive to invest depends both on the transfer payments and the quantities that the divisions expect to trade. A cost-based transfer pricing scheme may mitigate hold-up problems in connection with divisional investments.


Multidivisional firms frequently rely on external market prices in order to value internal transactions across profit centers. Baldenius and Reichelstein examine transfer pricing when an upstream division has monopoly power to sell a part to a downstream division and to external customers. Using analytical analysis, the authors show that using intracompany discounts will improve overall firm profits if the selling firm is capacity constrained.


Use analytical analysis to demonstrate that segment profit calculations can understate or overstate the value added by the segment depending on the segment’s relative contribution margin and the firm sometimes benefits from devoting resources to less profitable segments and perhaps even from serving seemingly unprofitable markets and/or customers.
Locating and Financing Affiliates in the Supply Chain


The authors examine the global equity supply chains of U.S. multinationals to explore how tax and nontax country characteristics affect whether firms use foreign holding companies and where they locate them. They find that U.S. multinationals supply equity from headquarters to their foreign operating companies through foreign holding companies located in countries that lightly tax equity distributions. They also find that foreign holding companies tend to be located in countries with less corruption and investment risk than the countries in which the operating companies they own are located. In addition, they provide empirical evidence that the Netherlands, a well-known location for international tax planning, is a particularly popular site for foreign equity holding companies.

Impact of Cost Information Quality on Pricing Negotiations


The authors use an experiment to examine the effect of more precise cost information on contract renegotiations between supply chain parties. The authors give participants the same cost information but the treatment group get information based on Activity Based Costing. The joint profit is shown to be higher with more precise cost information following price negotiation. Also, the seller’s perception of the fairness of the buyer’s arguments increases with precise cost information when the buyer is the cause of inefficiency. The buyer’s profit is higher with precise cost information and buyer inefficiency than with precise cost information and seller inefficiency or with less precise cost information regardless of the source of the inefficiency.

(in the experiment the cause of inefficiency in the supply chain is related to testing costs. This inefficiency is manipulated by providing buyers with one of two different explanations for high testing costs. Half of the buyers were told that the testing costs were due to the buyers use of a defective software system. The other half were told that the seller’s choice of casing size was the cause of the inefficiency.)
Information Sharing Between Supply Chain Partners


Schloetzer examines whether the potential for hold-up in supply chains influences the extent of process integration and information sharing between partners? The data includes performance scorecards and financial performance data from a manufacturer regarding its contractual arrangements with its 156 distributors. The authors finds the potential for hold-up can restrict the performance benefits available to partners when developing more extensive supply chain integration practices.

Accounting Earnings and Returns Implications of Supply Chains


The author examines whether and how customer base concentration affects supplier firm fundamentals and stock market valuation. The author finds a positive relation between customer concentration and accounting rates of return. He finds evidence that efficiencies accrue to the supplier with concentrated customer bases (reduced operating expenses per dollar of sales) and enhanced asset utilization. Further, he finds that investors underreact to changes in customer base concentration as abnormal returns appear to result from a trading strategy based on changes in customer base concentration.


The authors investigate how buying power in the retail market affects suppliers’ profitability. They form a sample of firms that supply retailers and use major customer disclosures to estimate relative bargaining position. They find that as sales to major customers increase, supplier gross margins and return on assets decrease while their inventory and payables management improves. Walmart is incrementally associated with increasing gross margins, improving cash collections, and extended payment terms with its vendors. Supplier power offsets some of these adverse effects. Their findings provide insight on financial implications of supply-chain dynamics where (1) one firm has an economic dependence on a major customer; and (2) the major customer is a leading channel member.
Information Externalities:


The authors look for informational advantages when an analyst follows both a firm and other companies in its supply chain. The authors demonstrate that the likelihood of an analyst following a supply-customer pair increases with the strength of the economic ties along the supply chain. The authors measure economic ties as the percentage of the supplier’s sales to the customer. They also find that analysts that follow the covered firm’s customer provide more accurate earnings forecasts for the supplier firm.


The authors examine whether supplier stock prices reflect information in their customers earnings announcement. They find that suppliers’ stock returns are correlated with details in customers earnings announcements.


The authors find that auditors will charge lower audit fees when they have strong knowledge and audit firms in that client’s supply chain. They also find that the discount is especially strong when the audit of the supply chain partner is done by the same office within the firm.
Partial Bibliography


