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# The Costs of Exchange

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## The Costs of Exchange

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**Abstract** When individuals choose - to obtain a good, to pursue a goal - the relevant prices facing them are the full opportunity costs of their choices. These opportunity costs incorporate not only the money price of the good but also the transaction costs of obtaining the good. Across individuals and groups, the full opportunity costs associated with attaining a good or goal may differ considerably even when the observed money prices do not. Better measures of these full costs can allow improved models of behavior.

We define the *cost of exchange*  $C_{ijkm}$  as the opportunity cost in total resources—money, time, and goods—for an individual with characteristics  $i$  to obtain a good  $j$  using a given form of exchange  $k$  in institutional setting  $m$ . To measure a specific cost of exchange empirically, we 1) specify a particular transaction in detail, 2) select individuals with designated characteristics, in a designated market and institutional setting, and 3) interview them concerning the full time and money costs they have actually incurred to carry out the transaction.

The illustrative data presented here show great variation across groups and countries in the costs of exchange, far more than the variation that is typically observed in money prices. Such variation is likely to affect what is produced and what exchanges take place in the market, which organizations and specialties survive, and even which rules of the game persist.

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# The Costs of Exchange

Alexandra Benham and Lee Benham\*

## 1 Introduction<sup>1</sup>

“What determines what goods and services are traded on markets and therefore priced? What determines the flow of real goods and services and therefore the standard of living?”

Ronald Coase (1999)

A fundamental assumption in economics—known as the law of one price—is that in a competitive market all individuals face the same prices. Our thesis here is that if the appropriate price is measured, individuals often face different prices for the same good, even in a competitive market. These price variations are likely to affect what is produced and what exchanges take place in the market, which organizations and specialties survive, and even which rules of the game persist.

What is the appropriate price? Consider an individual making choices based on prices and budget constraints. The relevant prices facing that individual are the full opportunity costs associated with those choices, including the prices of the goods themselves plus the transaction costs of obtaining the goods. Even if the money price of a particular good varies little across individuals, the opportunity cost of engaging in the transaction to obtain the good often varies substantially. This cost will be affected by the individual’s personal knowledge, personal network, transaction skills, time costs, location, organization, institutional setting, and so on. Only in very exceptional cases will all active participants in a transaction face identical opportunity costs. And it is even rarer that all *potential* participants face identical costs.

## 2 Definitions of Costs

### A. Transaction Costs

Transaction costs are frequently invoked to explain economic phenomena.<sup>2</sup> Yet there are few direct empirical estimates of transaction costs.<sup>3</sup> The benefits of having better estimates are clear. Why does better information not currently exist?

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\* Ronald Coase Institute and Washington University in St. Louis. July 3, 2001.

<sup>1</sup> Substantial sections of this paper are adapted from Benham and Benham (2000).

<sup>2</sup> Searching EconLit for the year 2000, we found 225 articles with “transaction cost(s)” in the title, key words, or abstract. For comparison, there were 329 articles with “imperfect”, as in imperfect market or imperfect information.

<sup>3</sup> For an alternative methodology to estimate the size of the transaction cost sector, see Wallis and North (1986). Eigen-Zucchi (2001) is developing an indicator of transaction costs using

One problem is that there is no standard terminology. Many different definitions of transaction costs appear in the literature. They often serve as heuristic devices that are not used actually to measure transaction costs. These definitions offer powerful conceptual insights, but they have not been translated into widely accepted operational standards. Kenneth Arrow has defined transaction costs as “the costs of running the economic system.”<sup>4</sup> Yoram Barzel defines transaction costs as “the costs associated with the transfer, capture, and protection of rights.”<sup>5</sup> Thrainn Eggertsson observes, “In general terms, transaction costs are the costs that arise when individuals exchange ownership rights to economic assets and enforce their exclusive rights. A clear-cut definition of transaction costs does not exist, but neither are the costs of production in the neoclassical model well defined.”<sup>6</sup>

Eirik Furubotn and Rudolf Richter examine transaction costs in the following terms:

“[T]ransaction costs include the costs of resources utilized for the creation, maintenance, use, change, and so on of institutions and organizations....When considered in relation to existing property and contract rights, transaction costs consist of the costs of defining and measuring resources or claims, plus the costs of utilizing and enforcing the rights specified. Applied to the transfer of existing property rights and the establishment or transfer of contract rights between individuals (or legal entities), transaction costs include the costs of information, negotiation, and enforcement.”<sup>7</sup>

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a variety of cross-country indices including stability of money supply, corruption, and communication variables.

<sup>4</sup> Arrow (1969, p. 48), as noted in Furubotn and Richter (1997, p. 40).

<sup>5</sup> Barzel (1997, p. 4).

<sup>6</sup> Eggertsson (1990, pp. 14-15). He continues: “When information is costly, various activities related to the exchange of property rights between individuals give rise to transaction costs. These activities include:

1. The search for information about the distribution of price and quality of commodities and labor inputs, and the search for potential buyers and sellers and for relevant information about their behavior and circumstances
2. The bargaining that is needed to find the true position of buyers and sellers when prices are endogenous
3. The making of contracts
4. The monitoring of contractual partners to see whether they abide by the forms of contract
5. The enforcement of a contract and the collection of damages when partners fail to observe their contractual obligations
6. The protection of property rights against third-party encroachment – for example, protection against pirates or even against the government in the case of illegitimate trade.”

<sup>7</sup> Furubotn and Richter (1997, p. 40).

“Typical examples of transaction costs are the costs of using the market [market transaction costs] and the costs of exercising the right to give orders within the firm [managerial transaction costs]....[There is also] the array of costs associated with the running and adjusting of the institutional framework of a polity [political transaction costs]....For each of these three types of transaction costs, it is possible to recognize two variants: (1) “fixed” transaction costs, that is, the specific investments made in setting up institutional arrangements; and (2) “variable” transaction costs, that is, costs that depend on the number or volume of transactions.”<sup>8</sup>

Second, estimation is problematic because production and transaction costs are jointly determined. This leads to formidable difficulties in estimating transaction costs separately. Economic theory suggests that changes in transaction costs have a first-order impact on the production frontier. Lower transaction costs mean more trade, greater specialization, changes in production costs, and increased output. Changes in production costs likewise have an impact on transaction costs.

### **B. The Costs of Exchange**

To overcome some of these difficulties, we propose to examine a related measure that we call the cost of exchange. The cost of exchange is defined as the opportunity cost faced by an individual to obtain a specified good using a given form of exchange within a given institutional setting. More specifically, *the cost of exchange  $C_{ijkm}$  is defined as the opportunity cost in total resources—money, time, and goods—for an individual with characteristics  $i$  to obtain a good  $j$  using a given form of exchange  $k$  in institutional setting  $m$ .*<sup>9</sup> The cost of exchange therefore includes both the cost of the good itself and the transaction costs incurred by the individual in obtaining the good. While we cannot decompose the costs directly into these components, in comparative analysis this approach will focus attention on the total consequences of differing transaction costs.

Where transaction costs are very high, many kinds of transactions may not take place at all. Even when a specific kind of transaction does occur, it may not take place in an open market context with money prices. Hence of all potential transactions, only a small subset will actually occur, and only a subset of these will appear in the market. Ascertaining why a particular transaction is undertaken by an individual requires knowledge of the opportunity costs of alternatives. To understand the choices made, we may need to estimate the cost of transactions that did not actually occur.

## **3 Why Costs of Exchange Vary**

The costs of exchange can be expected to vary across individuals, groups, and countries, both for some well understood reasons and for some less explored. To what extent the explanatory variables that predominate in the economics literature—tariffs,

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<sup>8</sup> Furubotn and Richter (1997, p. 43).

<sup>9</sup> The form of exchange refers to the type of market (formal vs. informal) in which the exchange takes place, or to dimensions such as pecuniary versus barter exchange.

taxes, price controls, monopoly, price discrimination, information asymmetries, asset specificity, strategic behavior, and opportunism—underlie this variation is not yet established. These are likely to explain some of the variation directly. In addition, tariffs, taxes, and price controls require regulations, monitoring, and a bureaucratic process which themselves can alter transaction costs. These effects are likely to extend beyond the sectors directly regulated. Other elements like personal networks and institutions may also contribute significantly to variation.

### **A. Across Countries**

Many of the factors discussed above vary significantly across countries. Taxes and tariffs are obvious and have long been examined as sources of price variation. The institutions of a country—the formal and informal rules of the game, including constitutional constraints, regulations, and norms, plus their enforcement characteristics—vary enormously and are likely to fundamentally affect the costs of exchange. Some elements have received attention, for example, corruption, social capital, and constitutional constraints<sup>10</sup>, but systematic analysis of their relationship to efficient exchange is generally at an early stage.<sup>11</sup>

The types of organizations that exist in the country, including private, public, and cooperative, influence the costs of exchange. For example, state-owned enterprises typically have different incentive structures than their private counterparts, and this can be expected to have an impact not only on the price of goods but on waiting times and forms and costs of exchange.<sup>12</sup> Political connections are likely to assume greater importance in this case.

Most economic models assume that countries with natural endowments will have a comparative advantage in those products and will have higher output. However, countries with abundant and readily accessible natural resources are in fact often poor and have low economic growth. We believe this is associated with higher costs of exchange there that arise from greater rent-seeking behavior in those countries. In addition, government decision-makers there have less incentive to support transaction-cost-reducing institutions like the rule of law, because they can get money to support their programs by appropriating natural resources.<sup>13</sup>

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<sup>10</sup> For example, see Knack and Keefer (1997) and Keefer (2001).

<sup>11</sup> See Benham and Benham (1997).

<sup>12</sup> The World Bank (1995).

<sup>13</sup> Sachs and Warner (2001) summarize and extend research showing that countries with great natural resource wealth tend to grow more slowly than resource-poor countries. They find that there is little direct evidence that omitted geographical or climate variables explain this, or that there is a bias resulting from other unobserved growth deterrents. They find that resource-abundant countries tend to be high-price economies and to miss out on export-led growth.

## **B. Across Individuals and Groups**

There are some conventional and relatively well-explored reasons for different individuals (and groups) to face different costs of exchange. Long-standing reasons are variations in transportation costs and in the opportunity cost of time.

Many other factors will also affect individuals' costs of exchange. These include specialization in the exchange (and frequency of conducting this kind of exchange), skill in negotiating, local knowledge,<sup>14</sup> personal networks, including elements of trust and social capital, political connections, and ethnic membership. If effective price controls or other state regulations are introduced, this may alter the costs of exchange differentially for sets of individuals possessing different characteristics.

## **4 Empirical Illustrations of Cost Variations**

To examine these costs empirically, we need a standardized methodology that specifies particular transactions in terms of the characteristics of the individual, the good to be obtained, the form of exchange, and the setting. Our approach is to select and specify some transactions in detail so that researchers can measure the time and money costs incurred when the transaction takes place. Individuals with designated characteristics (and by group or country) can then be interviewed concerning the full time and money costs they have actually incurred in engaging in the transaction. These serve as our proxies for the costs of exchange.<sup>15</sup>

That the money price paid for a good may vary across non-competitive groups or if the commodity is non-tradable is commonly recognized. However, as the examples below will show, the variation in money price is likely to be much smaller than the variation in the costs of exchange. Consider the following examples.

### **A. Variations in Cost of Exchange Across Countries**

First, consider some cost information from a simple transaction, obtaining a business telephone. This will affect the size of the telephone communications network, the extent of use, the overall size of the market, and the extent of specialization. In the early 1990's, we investigated the cost of obtaining a business telephone in several countries. The actual price to obtain a telephone installed within two weeks ranged from \$130 in Malaysia to \$6000 in Argentina. In Egypt in 1996, the official published price for a telephone was \$295 and the official published "urgent response" price was

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<sup>14</sup> An individual possessing what Hayek (1945) termed "local knowledge" can typically accomplish things faster, better, and cheaper than individuals without that local knowledge. This means lower transaction costs in that domain for that individual. Local knowledge differs across individuals and is much less transparent than market price.

<sup>15</sup> Note that this framework focuses on the opportunity cost faced by an individual seeking to enact a specified form of exchange (for example, via formal contract or informal arrangement, money or barter compensation) in a specified institutional setting. It does not include the costs of building market institutions, the costs of setting the political framework in place, or the cost to the individual of creating personal networks, establishing a reputation, or developing transaction-related skills.

\$885. To proxy for the opportunity cost, we compared the purchase prices for similar Cairo apartments with and without a telephone already installed. This difference, which reflects the expected spot market price for a telephone for someone not well-connected in this market, was approximately \$1180 to \$1770.

Efficiently transferring ownership of assets is fundamental to a modern market economy. The costs associated with transferring ownership of an apartment can be examined in this context. In Cairo, an individual who buys an apartment and registers the transfer of ownership pays an additional 12% of the apartment price to third parties: 6% for taxes and 6% for a lawyer to register the transfer as required by law. The services of a real estate agent, which are optional, cost about 1.5% of the sale price. In St. Louis, Missouri, USA, the cost of legally transferring ownership is approximately 1.5% of the sale price; if the services of a real estate agent are used there, they cost 6% of the sale price. The differences across these rates are striking. Fees are eight times as high in Cairo as in St. Louis within the state-controlled sector, but only one-fourth as high within the competitive sector.<sup>16</sup>

Transactions across national borders are important indicators of the extent of the market. To look at variation across countries, we examined the cost of exchange associated with importing a crankshaft for a large earthmoving tractor. In Peru in 1989, formally obtaining this crankshaft cost four times as much in money price and over 280 times as much in waiting time (41 weeks versus one day) as in the USA. In Argentina, the money price was twice that in the USA, and the waiting time was up to 30 days. In contrast, in Malaysia the money price and waiting time were essentially the same as in the USA. In Hungary, before currency and import regulations were liberalized around 1989, it took 30-48 weeks to replace a crankshaft for a western-made tractor; after liberalization, this wait dropped to two weeks. A related measure is the average waiting time to clear items already in port. In Singapore this is 15 minutes, while in Tanzania it is 7-14 days, with waits of up to 91 days reported.<sup>17</sup> Fourteen days' wait is more than 1300 times the average waiting time in Singapore.

Obtaining legal permission to open a new business is another arena of interest. An example of the simulation approach is provided in Hernando de Soto's book, *The Other Path*. In Lima, Peru, in 1983 it took 289 days of full-time work by a team of researchers to go through all the legal steps to obtain all the permits necessary to open a small textile firm, without paying (many) bribes or using political connections.<sup>18</sup> It is not clear that anyone in Peru other than de Soto's team ever went through this entire process to obtain a permit, but this estimate of opportunity cost was entirely consistent with the choices individuals were making at that time. Those without

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<sup>16</sup> Benham (1997).

<sup>17</sup> The Services Corporation (1998).

<sup>18</sup> de Soto (1989). This option was open to everyone, but the costs were prohibitive to most individuals in the society. These costs vary depending on the social and political position of the persons involved in the transaction. If we simulated the process of conducting the necessary exchanges to start producing in the informal sector, different groups would likely have a comparative advantage in that setting.

political connections typically remained in the informal sector, not legally registered. When de Soto repeated the simulation in Tampa, Florida, it took only two hours to obtain a permit to open a small business. Thus in Peru the time cost was over 1000 times as high as in Florida. In this kind of highly bureaucratized environment, the costs of not being physically located in the capital city can be daunting. For example, in Tanzania a business partnership based in Mwanza outside the capital must spend five to ten times as much to register as a business partnership based in Dar-es-Salaam.<sup>19</sup> A recent study by Djankov et al. (2000) examined the regulation of business entry in 75 countries by tabulating the number of steps officially required to open a new business. They found wide variations, for example 2 days, 2 procedures, and \$280 fees in Canada versus 154 days, 12 procedures, and \$11,612 fees in Austria.

### **B. Variations in Cost of Exchange Across Individuals**

When we ask individuals within a given setting what it costs to do something, we often find substantial heterogeneity in their responses. A recent survey of Bulgarian business owners illustrates large variability in time and money costs to register a new firm.

As in any survey, some respondents may have under- or overestimated their actual experience here, but it is most unlikely that this range of reported experience is due wholly to measurement error. Note also that since only established businesses were queried, this example captures only the variability across individuals who did successfully register their firms. No information is provided here on the perceived costs faced by those who were deterred by those costs from actually registering. Obviously, these latter costs are highly relevant for many issues, and not including them leads to an understatement of the overall expected costs of exchange. However, they are very difficult to estimate.

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<sup>19</sup> The Services Corporation (1998).

**Table 1**

**Bulgaria: How did you register your firm, how many days did that take, and how much did it cost?** <sup>20</sup>

	<b>How Many Days Did It Take?</b>	<b>How Much Did It Cost?</b>
<b>Registered Without an Intermediary</b>	(N=81)	(N=59)
<b>Median</b>	<b>15 days</b>	<b>100 Levs</b>
Mean	22 days	211 Levs
Minimum	1 day	6 Levs
Maximum	90 days	5000 Levs
<b>Registered Through an Intermediary</b>	(N=34)	(N=25)
<b>Median</b>	<b>14 days</b>	<b>140 Levs</b>
Mean	20 days	157 Levs
Minimum	1 day	1 Lev
Maximum	90 days	500 Levs

### **C. Variations in Money Prices**

The variations illustrated above in the costs of exchange are large compared with variations commonly reported in money prices.

Monopolies are a principal source of price distortion in economic theory and textbooks. Yet in developed countries, monopolies rarely sustain long-run prices more than 20% above the competitive level.

To get a sense of the magnitude of international price variations for a standardized locally produced and locally consumed good, consider the variation across 32 countries in the money cost of a McDonald Big Mac. The data were collected by *The*

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<sup>20</sup> Adapted from Gancheva (2000).

*Economist* and reported April 19, 2001.<sup>21</sup> The highest price observed was \$3.65 USD in Switzerland, and the lowest was \$1.17 USD in the Philippines. The ratio of the highest to lowest price observed is 3.12.

As another illustration, across 44 countries, the 1999 price of electricity per kilowatt-hour for industry varied from 1.8 U.S. cents in Kazakhstan to 16.3 U.S. cents in Grenada, a ratio of 9.06.<sup>22</sup>

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<sup>21</sup> Big Mac Index from  
*The Economist*, April 19, 2001

	Price in US Dollars
Philippines	1.17
Malaysia	1.19
South Africa	1.19
China	1.20
Russia	1.21
Thailand	1.21
Hungary	1.32
Indonesia	1.35
Hong Kong	1.37
Czech Republic	1.43
New Zealand	1.46
Poland	1.46
Australia	1.52
Brazil	1.64
Singapore	1.82
Italy	1.96
Spain	2.09
Chile	2.10
Taiwan	2.13
Canada	2.14
Euro Area	2.27
South Korea	2.27
Germany	2.30
Sweden	2.33
Mexico	2.36
Japan	2.38
France	2.49
Argentina	2.50
United States	2.54
Britain	2.85
Denmark	2.93
Switzerland	3.65
Mean	1.89
Standard deviation	0.62
Range	1.17 to 3.65
Ratio max/min	3.12

For more clearly tradable goods, price variation should—according to the standard analysis—be smaller. Haskel and Wolf examined more than 100 manufactured household items sold by IKEA, a Swedish furniture retailer, across 25 countries for the years 1995-1998.<sup>23</sup> They found the median differences across countries in catalog prices were twenty to thirty percent for most goods. The price difference between the cheapest and the most expensive stores in the sample exceeded fifty percent for most goods, with ranges up to 900 percent. The variation in these money prices—although smaller than the variations shown above for costs of exchange—are nevertheless surprisingly large.

Price data are typically collected and reported in ways that do not capture or investigate fully the variation in the money prices which individuals face. The emphasis is generally on estimating and comparing mean prices, and there is often concern when substantial variation appears.<sup>24</sup> Haskel and Wolf and a few other researchers are exceptions in systematically examining money price variations across outlets and countries in great microeconomic detail. This is an important step in the right direction but still misses much of the variation in opportunity cost from the individual buyer's perspective.

## 5 Conclusions

If one examines the costs of exchange that individuals incur to obtain a specific good or service—that is, the money price of the good or service plus the transaction costs—one observes substantial variation across individuals and across countries. We have observed costs in some countries that are 10 times, 100 times, even 1000 times as great as in other countries.<sup>25</sup> These variations are far greater than those reported in the published data on money prices. The published price data that economists typically use in empirical work may often poorly represent the opportunity costs facing individuals who are deciding what exchanges to undertake.

The expense of obtaining data to measure the costs of exchange is a major deterrent to the undertaking. Given the difficulty of collecting credible market price data (for

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<sup>22</sup> The mean is 7.05 cents and the standard deviation is 3.44 cents, measured in U.S. dollars per kilowatt-hour. International Energy Agency (2001).

<sup>23</sup> Haskel and Wolf (2001).

<sup>24</sup> For example, a recent international price comparison study of branded and generic consumer items across four countries was commissioned by the Department of Trade and Industry in Britain. Given the goal of producing estimates of average prices with a margin of error within certain prescribed boundaries, the report comments, "As a guideline, we have considered a coefficient of variation greater than 20% to indicate inherently high variability in the price data collected." Under some circumstances high variability led to items being rejected for reporting purposes. UK Department of Trade and Industry (2001).

<sup>25</sup> Visas to enter the host country are an important intermediate good for attendance at international conferences. In the process of helping several participants to obtain visas for a conference in France in 1998, we observed that the time price was easily 100 times as high in some cases as in others.

example, determining if the posted price is what people actually pay), how realistic is it to advocate the use of an even more costly metric? In some cases, low-cost proxies may emerge for measuring these costs,<sup>26</sup> but in general the data are expensive to collect in both time and money. The economics profession has by and large avoided the effort of gathering primary data.<sup>27</sup> In the time required to collect systematic empirical data, more than one theoretical article can typically be written. A very different incentive structure within the economics profession is needed if many are to become seriously engaged.

The standard price-theoretic model, elegant and powerful as it is, explains only a modest share of most phenomena that economists address. To augment the standard model, economists invoke a variety of additional concepts like imperfect information, social capital, and institutions.<sup>28</sup> These concepts are frequently explained in terms of their impact on transaction costs. In many cases, lack of clear definitions and empirical measures hinders efforts to assess their impact. We suggest that the power of the basic price-theoretic model may be enhanced directly by considering as the relevant prices the costs of exchange that individuals actually face.

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<sup>26</sup> Djankov et al. (2000) use the officially stated number of steps, fees, and times required to obtain permission to open a new business.

<sup>27</sup> Among the few exceptions is the work by Stone et al. (1996).

<sup>28</sup> Transaction cost economics is among the most successful approaches within the field of industrial organization. “The primary objective of transaction cost economics (TCE) is to understand how variations in certain basic characteristics of transactions lead to the diverse organizational arrangements that govern trade in a market economy.” (Joskow, 2001). Good examples of work in this area are Joskow (1985) and Williamson (1985). For reviews of the literature see Shelanski and Klein (1995), and Boerner and Macher (2001) who provide a discussion of the methodology within the field. Numerous studies classify firms by, say, their degree of asset specificity and from that predict and examine governance structures, degree of vertical integration, and contractual forms.

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