

**THE IMPACT OF MARKET LIBERALIZATION
ON VERTICAL SCOPE: ARGENTINA, 1989-1995¹**

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Summary

This paper looks at the impact of market liberalization on the vertical scope of the firm. It is reasoned that downstream (output) as well as upstream (input) market imperfections in closed economies will in general tend to encourage higher levels of vertical integration. Using the case of Argentina it is shown how the opening of the economy can reverse many of these incentives and thus encourage firms to reduce their levels of vertical integration. Findings from a cross-sectional survey of 163 firms support the overall effect as well as specific hypotheses regarding the impact of particular reforms on vertical scope. Specifically, the reduction of inflation as well as import costs are correlated with increased levels of outsourcing. In addition, higher demand standards associated with sales to multinational enterprises also encourage increased specialization. These and other factors are then elaborated upon using the case of the Argentine steel producer Siderar.

1. INTRODUCTION

The wave of market liberalization which has swept many emerging as well as developed economies since the early 1990s has had numerous effects on how firms based in these countries operate and organize themselves. While the post WWII era was dominated by the adoption of protectionist policies by the vast majority of the developing world, the opposite can be claimed for the post-communist era. Of the 78 economies which Sachs and Warner (1995) classify as closed in the 1950s, 43 have since undertaken market liberalization programs. The reasons for this change in policy are varied, ranging from changes in ideology to economic hardship. Regardless of the motive, the effect on these economies has been dramatic.

Among the most important and basic aspects of firm strategy impacted by these reforms is the decision of whether or not to vertically integrate. As a general topic vertical integration and its determinants have been researched in the field of economics for more than half a century, with early discussions being found in Coase (1937) amongst other. However, the topic has rarely been analyzed in the context of market liberalization, which typically implies a change in the incentive as well as legal structures within which the firm must operate. While the overall effect will depend on the starting conditions and structures (Sachs and Warner, 1995), it is reasoned that in most cases following an opening of the economy one could expect to witness an increase in incentives for firm specialization, in this case vertically. Barring the existence of previous regulation specifically splitting up the value-chain, one would expect to witness a lowering of the average level of vertical integration in the economy following liberalization.

The objective of this paper is to explore this issue of market liberalization and its impact on vertical integration using the case of Argentina, a country which went from being one of the most closed economies in the Latin America in the 1980s to one of its most open in the 1990s. Both the speed and breadth of the reforms make Argentina an attractive country in which to study

the impact of market liberalization on firm structure. Hypotheses are developed which predict the overall effect on the vertical integration decision as well as identify which factors in specific are most important in that decision. These hypotheses are then tested using data on a sample of Argentine firms. In specific, results from a broad-based survey of 163 firms are used, as well as an in depth case study of the experience of the steel producer Siderar.

2. VERTICAL INTEGRATION AND MARKET LIBERALIZATION: THE CASE OF ARGENTINA

As mentioned in the Introduction, market liberalization is a phenomenon which has swept many if not most economies in the world during the past two decades. While this is true of even advanced economies such as Great Britain which witnessed massive privatization and deregulation in the 1980s and 1990s, the impact is most clearly felt in emerging markets, many of which until the 1990s were dominated by import substitution policies. Argentina is a prime example. While it started the 20th century as one of the world's leading economies, the adoption of protectionist policies starting in 1930 and continuing for six decades resulted in the country being relegated to secondary status in the global arena (see Appendix 1 for more detail). It was only with the adoption of market liberalization policies starting in 1989 that the country began to reintegrate itself into the international economy.

Extensive trade, regulatory, monetary, and fiscal reform in the 1990s has allowed Argentina to go from one of Latin America's most closed economies (ranked 15th out of 19 in Latin America in 1985 in terms of economic openness according to the *Economic Freedom of the World Report*, and 93rd worldwide) to one of its most open (4th in Latin America and 23rd overall by 1995). Argentina is not alone in its adoption of liberal economic policies. Countries such as Mexico, Brazil, India, as well as the entire former Soviet Block have undertaken substantial

reform along similar lines to that of Argentina. However, it is true that if one excludes the former communist countries, the change in Argentina has been more dramatic than in most other countries.

This fact makes Argentina an interesting laboratory to study the impact of liberalization on firm behavior for two reasons. First, because of the breadth and speed of the reform process (most reforms having been implemented between 1989 and 1991), it provides a quasi-experimental setting to study the change in firm behavior as a result of the reforms. Secondly, it may serve as a signal of what to expect in other economies as their reform processes advance.

While market liberalization will affect firm behavior and competitive dynamics in many ways, amongst the most elementary of these is the level of vertical scope of the firm. The topic of vertical integration is one which has a long history in the field of economics. As Perry (1989) points out, theories of vertical integration, or the replacement of market relations with exchanges inside the firm, lie at the intersection of three sets of related literatures: 1) the theory of the firm; 2) the theory of contracts; and 3) the theory of markets. And, while the theories explaining vertical integration are many, those which are most relevant in the context of market liberalization can be classified as relating to either upstream (input) or downstream (output) markets. In general, as will be shown, the former tend to be associated with contracting issues while the latter with changes in competitive pressures.

Upstream Markets

Most upstream or input market forces influencing the vertical integration decision of the firm can be related in one way or another to contracting issues. In specific, the potential for opportunism on the part of both customers and vendors, as well as the level of environmental volatility, in particular inflation, can affect this decision. The first of these, the potential for

opportunism, has its roots in the idea of transaction costs, a concept originally proposed by Coase (1937), but most developed by Williamson (1975, 1985). Central to the theory is the idea of asset specificity, be it of physical, human, or site-specific capital. The concern is that when an asset is highly specialized to the production of one product, the cost of switching to the production of another is quite high. As such, one places oneself at risk of opportunistic behavior on the part of the customer to extract “appropriable quasi-rents,” which Klein, Crawford, and Alchian (1978) define as the difference between the value of the asset in its primary use and the value in its next best use. This potential opportunism discourages the establishment of supplier industries and may force one to vertically integrate.

One of the key determinants of asset specificity, and thus the potential for opportunism on the part of the customer or downstream firm, is the size of the downstream industry. The larger the industry, the greater the potential for a supplier to serve similar customers and thus the lower the asset specificity. An idea first introduced by Adam Smith in the 18th century, the basis of the argument still holds today: as a market grows, the potential to develop specialized suppliers increases due to the availability of a sizeable customer base. Rosenberg (1963) takes this idea one step further and focuses not only on the growth of the specific market in question but also related ones based on a convergence in basic technologies. Arora and Gambardella (1997) similarly correlate the development of product specific versus generic competencies and the growth of market size, finding the former to be more prevalent the larger the market.

Among the most targeted studies of the impact of market size on firm specialization and vertical integration is that of Stigler (1951). He and others (Tucker and Wilder, 1977) claim that one would tend to see a high degree of vertical integration amongst infant industries, as the level of production during the early years of an industry is not large enough to support specialized suppliers. As such, firms will be forced to produce these inputs internally. As the industry

matures, demand grows, and new players enter the market, those stages of the production process subject to increasing returns will be spun off. The result is a decrease in the overall level of vertical integration. As the industry begins to decline, however, it will go through the same situation present in the early years, with supply markets being too small to support independent firms. As such, one will witness a subsequent increase in vertical integration in the later years of the industry life cycle, implying a U-shaped evolution.

While the Stigler model looks at the evolution of an industry to determine levels of vertical integration, the variable he is really focusing on is relative industry size. When viewed from this point of view, the model becomes of particular relevance for closed economies, where certain industries may never reach “maturity” as a result of being confined to national borders. As such, industries may find themselves trapped in Stigler’s infant stage of development, and thus remain with a high level of vertical integration.

This is particularly true in the case of Argentina, where very few markets could have been considered open to outside competition or even part of the world market prior to 1989. One indication of this is the country’s participation in world exports, which prior to reform was only one fourth the country’s share of world GDP (de la Balze, 1995). This was due in part to the fact that export taxes and restrictions were placed on industries so as to allow the government to influence local supply conditions and prices. As such, domestic firms were essentially forced to compete in a market restricted to Argentina’s population of 33 million, a fact which extrapolating from Stigler and Williamson would encourage firms to maintain higher levels of vertical integration.

This situation changed as a result of market liberalization for two reasons. Heightened investment coupled with increased stability helped to dramatically increase the rate of growth of the economy. Between 1990 and 1994 the economy grew by over 30 percent in real terms, thus increasing the size of the market

(Ministerio de Economía, 1995a). Growth in the domestic economy, however, was not the only, nor necessarily most important, factor in increasing the size of potential markets for supplier industries. Reducing barriers to the international economy opened the possibility of conceiving one's market as being much larger than simply Argentina. In addition to the completion of the Mercosur agreement which liberalized trade among countries in the Southern Cone, there has been a general trend towards reduced protectionism in recent years. Virtually all export restrictions including taxes and quotas have been eliminated. From 1989 to 1995 overall exports more than doubled. This has helped in increasing the potential market size for firms contemplating setting up production of intermediary products, and thus reduced the need for firms to backwards integrate.

Even in those industries which were able to grow enough to support supplier industries, in Argentina as in many former populist countries, there existed institutional barriers to moving along Stigler's curve of vertical integration, in specific the power of unions and labor. Until the reform process began in Argentina in the early 1990s, it had been essentially impossible to lay-off or fire workers for the previous forty years. As such, if one were to follow Stigler's argument, with firms vertically integrating in the early stages of an industry, firms in Argentina were never allowed to move to the second stage of vertical de-integration, as they could not layoff workers. As such, once a firm became vertically integrated, it tended to stay that way. Thus, while it was very easy to increase vertical integration, it was extremely difficult to decrease it, favoring an overall upward trend. Though labor reform has been the slowest to occur, the power of the unions has been dramatically reduced since 1989, which has made restructuring at least a possibility, particularly in the case of state-owned enterprises. The incentives to do so are particularly acute in the case of Argentina, as the social charges of labor are still very high as compared to other industrialized countries (~50 percent vs. ~30 percent for countries such as the US, Switzerland, and Spain - de la Balze, 1995). This increase in flexibility has had two effects. On the one hand, it has contributed to basic *intra-firm* efficiency gains associated with reducing excess employment. On the other hand, it has also provided firms with the opportunity to outsource certain stages of the value chain previously undertaken in-house, thus contributing to system-wide or *inter-firm* efficiency gains. Many of the large firms have

downsized their formal organizations by providing incentives to employees to establish their own businesses which would then supply the core firm. In various instances these start-ups have been given contract guarantees for a period of time and in other cases seed capital (e.g., IMPSA and YPF).

Under closed market policies, the potential for opportunism could also exist on the part of the suppliers encouraging backwards integration by customers. With high tariff and non-tariff barriers on imports, local suppliers have the potential to hold customers hostage, or else provide sub-standard service in terms of quality and or delivery. One way to avoid these problems is to vertically integrate so as to secure constant supply or quality of intermediary inputs. This was particularly important in turbulent emerging markets such as Argentina in the 1970s and 1980s, where even imports did not necessarily provide a solution due to government restrictions or cost limitations (Stigler, 1951). Thus, even if the economics were there for the development of a local supplier base, firms might opt to produce critical inputs themselves to avoid these contract enforcement problems. This was especially true for firms which were trying to compete internationally, such as IMPSA -- a world-class vendor of port cranes and turbines -- which could not obtain the requisite quality from local suppliers and was forced to backwards integrate to just after the production of the raw steel.

The lowering of import barriers, however, made international sourcing of quality inputs a much more viable alternative, and allowed firms to focus on those stages of the value chain in which they had the greatest advantage. Between 1989 and 1995, the average and most frequent tariffs both have been reduced by over 50 percent (see Table 1). The result was an increase in imports from \$4.2 billion in 1989 to over \$21.5 billion in 1994 (Ministerio de Economía, 1995a).

Insert Table 1 Here

While in stable environments the potential exists to mitigate some of the opportunistic behaviors described above through the provision of detailed long-term contracts, such provisions can be extremely costly and under conditions of high uncertainty it may be impossible to fully specify a contract (see Hart and Holmstrom, 1986 for greater detail). The ability to write complete contracts is challenged in many closed economies as a result of economic instability stemming from hyperinflation. This is particularly true in the case of Argentina which was facing inflation levels of up to 5000 percent per month in 1989 (Ministerio de Economía, 1995a), making the setting of prices amongst other aspects of a contract extremely difficult. As such, vertical integration could be a more efficient and effective form of governance.

With the pegging of the Argentine peso to the US dollar through the Convertibility Law of April 1991, all of this changed. Consumer inflation plummeted to an annual rate of 18 percent in 1992, and to less than 5 percent by 1995 (de la Balze, 1995). The reduction in inflation increased the ease of writing contracts, as one was better able to specify future prices. Without the uncertainty brought about by hyperinflation, firms could engage in outsourcing contracts without the fear of having pre-determined profit margins eroded by changes in relative prices. As such, the willingness not only of customers to outsource, but also of the supplier industries to develop increased following the reduction of inflation and the stabilization of the economy (see Table 2). The ease and attractiveness of writing contracts has also increased as a result of the elimination of many transaction-based taxes and fees such as stamp taxes in favor of a broadly based 18 percent VAT on goods and service.

Insert Table 2 Here

The volatility in the product market attributed to hyperinflation also existed in the capital markets. Hyperinflation not only made it difficult to set interest rates but also resulted in widespread capital flight. The two of these combined to drastically limit the level of liquidity in the Argentine economy. Small firms in particular are disadvantaged in periods such as this as a result of not being able to finance ventures with cash flow from other businesses and being too small to access capital internationally. Rajan and Zingales (1998) show in their cross country work how a lack of a developed capital market can impede the growth of new firms, or in this case supplier industries. As such, even if the appropriate market conditions existed for supplier industries to develop, a lack of available capital could prevent their formation.

In countries such as Argentina which are burdened by debt accumulated in the 1970s (over \$100 billion by the late 1990s), the two decades since have been ones of austerity in terms of gaining access to international financing, particularly the 1980s which saw stagnant growth and hyperinflation dominate. The drop in inflation described above, however, resulted in a dramatic increase in the money supply, due in large part to the return of capital which had fled abroad in the previous decade. By some estimates, the amount of investments held by Argentines outside the country during the 1980s exceeded \$50 billion. The monetarization of the economy as measured by M3* (domestic and \$ denominated) increased three fold from June 1991 to December 1994, from less than \$14 billion to more than \$55 billion (Ministerio de Economía, 1995a). As a share of GDP, M3* increased from less than 7 percent to roughly 19 percent during the same period. Though still below levels for more developed economies, it represents a dramatic change from the previous state. This increase in money supply was accompanied by both an increase in lending by the domestic financial system as well as a reduction in interest rates. Loans to the private sector increased from \$14.3 billion in June 1991 to just under \$48 billion in December 1994 (Ministerio de Economía, 1995a). And, while capital markets are still tight when compared to European or North American economies, the increased stability of the economy in the 1990s did increase on average the potential for supplier industries to develop.

Downstream Markets

In contrast to upstream market factors affecting vertical integration, downstream ones tend not to focus on contracting issues but rather on the role of competition in encouraging vertical specialization. Under closed market policies, monopolists or monopsonists can be tempted to integrate either forward or backward to extract marginal rents at competitive stages. This can be done either by foreclosing access to critical resources, thus serving as a barrier to entry (Bain, 1956), or by price discriminating. In countries such as Argentina and other emerging markets in which many industries are dominated by one or a few players, such an extension of monopoly power is a viable option.

Related to this illegitimate use of power is the lack of a level playing field when it comes to the acquisition of resources. It was discussed earlier how larger firms were at an advantage when it came to the issue of access to financing. The same holds true in the markets for entrepreneurial capital and political influence (Ghemawat and Khanna, 1998). Political favors and preferential access to the bureaucracy can place certain firms in an advantaged position to expand into other stages of the value chain. In addition, by limiting the role of foreign companies these policies increase the relative power of these large firms to dominate the market for talented personnel. This in itself becomes a resource which has the potential to be exploited by expanding one's span of the value chain (Penrose, 1959).

Since the beginning of the reform process in 1989, however, most domestic markets have not only been deregulated, but also opened to foreign competition as a result of the reduction in trade barriers and foreign investment restrictions. While it was argued that the drop in tariffs and increase in inward FDI made the outsourcing of intermediary products a greater possibility, they also increased the level of competition in one's own industry. The impact of this increase in competition is evident from the prices of traded goods which only marginally increased from 1990-1994. This pressure is heightened by a pegging of the currency to the dollar at what many

considered to be an overvalued exchange rate. Given the quality of its workforce, Argentina was a relatively cheap labor location prior to the Convertibility Law. However, the rate at which the peso was pegged resulted in average monthly wages increasing from \$171 in 1989 to nearly \$700 by mid-1994 (de la Balze, 1995).

In addition, foreign goods suddenly became relatively less expensive. Combined with a reduction in tariffs and other non-tariff restrictions, this change in relative prices had a dramatic impact on the importation of goods. In the nine months following the adoption of the Convertibility Law, the prices of goods exposed to foreign competition stayed essentially flat. By contrast those not subject to foreign competition increased by 35 percent (Rojo and Canosa, 1992). While the growth of the latter has slowed since, the majority of what inflation has existed since April 1991 can be attributed to the non-traded sector (Ministerio de Economía, 1995c). As such, it is those firms involved in the traded sectors of the economy which have been under particular price pressure since the liberalizing of the economy. All of these factors combined to increase the pressure for heightened specialization on one's core competitive advantages.

Among those firms in Argentina which were most affected by this reduction in protectionism were the bevy of state-owned enterprises (SOEs). With little if any competition and soft-budget constraints, these firms were often used for their employment rather than production abilities. As such, growth both through vertical and horizontal integration was viewed as one way of expanding employment. Much of this changed as a result of the massive privatization of state-owned enterprises. These firms which employed 350,000 of the government's roughly 1,000,000 workers were key mechanisms by which the government regulated the national economy. Unfortunately, they were also in general highly inefficient. The state railroad and steel complexes were reported to be losing on the order of one million dollars per day *each*. It is estimated that the accumulated demand for financing between 1965 and 1987 by state-owned enterprises was \$52 billion, or 90 percent of the country's foreign debt as of 1988 (de la Balze, 1995).

The financial pressures imposed by such losses led to the passage of the Government Reform Law of 1989, which set up the guidelines for the privatization of the various state-owned enterprises. The privatizations

began in 1990 and as of 1995 had affected over 60 state-owned firms, totaling \$26 billion worth of net assets. These included the telephone network; the national airline; the production, transmission and distribution of electricity; the distribution of water and sewage; the ports and railways; the construction and operation of roads; the national TV and radio stations; as well as chemical, steel, oil, and defense companies (FIEL, 1995a). These privatizations have increased the importance of hard budget constraints in the economy and reduced the use of SOEs as employment tools. Furthermore, more than half of the assets sold during the privatization process were purchased by foreign firms, thus increasing the level of competition faced by domestic firms and the pressure to focus on their core strengths.

As one can see from the above discussion, there were a number of factors, both relating to upstream and downstream markets which favored high levels of vertical integration during Argentina's era of closed market politics which stretched from World War II until 1989, and increased specialization since the opening of the economy in the 1990s. In the section which follows, specific hypotheses are proposed regarding the overall effect of market liberalization on vertical integration as well as regarding which firms in particular would be most affected.

Insert Table 3 Here

3. HYPOTHESES

In the above discussion (summarized in Table 3), it was shown that under typical closed market policies, a number of incentives or rationales exist for heightened levels of vertical integration. With the advent of market liberalization, many of these are either eliminated or reversed. As such, one would expect the following hypothesis to hold:

Hypothesis 1: *Following market liberalization, one should expect to see a decrease in overall levels of vertical integration amongst firms.*

The above hypothesis applies not only to the Argentine case but also to other economies which adopted similar policies, including most other Latin American countries. Where there is potential for variation is when it comes to specific internal policies affecting vertical integration, such as in China where government policies split the vertical chain of many technology-intensive industries into distinct entities, perhaps to an extent greater than would be the natural equilibrium. In the absence, though, of such targeted policies which go counter to the factors discussed above, one would expect Hypothesis 1 to generalize to most liberalizing economies.

As pointed out in the discussion earlier, there are several forces acting upon firms in the post-liberalization period which push in the direction of supporting Hypothesis 1. In order to disentangle these various effects and identify those which have had the strongest impact, a number of subsequent hypotheses are put forward based on the previous discussion and Table 3. However, whereas the previous discussion considered factors impacting both firms looking to potentially vertically de-integrate as well as ones looking to establish themselves as potential suppliers, the focus here is on the former, and as will be seen in the empirical section the data is collected from their point of view. What this implies is that certain factors such as capital market conditions and market size are not explored.

As previously mentioned, one of the factors affecting the potential to write complete contracts with suppliers and thus increase outsourcing is the level of stability in the environment, and in particular the level of inflation. As such:

Hypothesis 2: *Those firms which view the reduction of inflation as critical in improving their business operations would tend to increase their level of outsourcing following market liberalization and economic stabilization.*

Likewise, the more firms see the changes in labor policy as providing them with increased flexibility, the more likely it is that they would reduce their level of vertical integration to take advantage of this new flexibility. Thus:

Hypothesis 3: *Firms viewing labor policy reforms as increasing their level of flexibility would be more likely to increase their levels of outsourcing.*

The other upstream market failure discussed earlier which is alleviated by economic liberalization relates to the need of firms to vertically integrate so as to guarantee supply and/or quality at a reasonable price. As a result of lower tariff barriers, this need is reduced as one is able to access the requisite products and quality internationally. Therefore:

Hypothesis 4: *Those firms which see the cost of imported inputs as decreasing will be more likely to increase their levels of outsourcing.*

It has also been argued that the opening of the market has increased the competitive downstream pressures which local firms face, thus forcing them to focus on those aspects of their businesses in which they have a competitive advantage and outsource the remaining ones. This push for specialization to be more competitive is not necessarily felt equally throughout the economy. Rather, certain segments experience this pressure more directly than others. And, while all firms claim to be facing increased competitive pressures, those which have the most direct contact with international demand standards will be most likely to feel the pressures to increase their levels of specialization. Selling directly to multinationals is one such way of being exposed to these heightened competitive standards (Toulan, 1997). From this reasoning one arrives at the following and final hypothesis:

Hypothesis 5: *Those firms which sell to multinational enterprises will be under increased pressures to specialize and as such decrease their level of vertical integration.*

And, while it is true that one might expect firms which meet these high demand standards to be more specialized regardless of whether or not there is liberalization, the issue comes down to a matter of degree. Under Argentina's era of closed market policies, inward foreign direct investment was controlled, and as a result of high import tariffs MNEs were in many cases forced to make due with what was available locally. By contrast, today these same firms have the option of importing needed inputs or bringing their suppliers with them, thus increasing the pressure placed upon local suppliers.

4. METHODOLOGY

In conducting the empirical component of this research, a dual approach was adopted, the first being a broad-based survey and the second an in depth case study of the privatized state-steel firm Siderar.

In undertaking the survey, the first decision to be made was to define the population of firms. It was decided that the sample would include all firms from the province of Mendoza with more than 10 employees in six key sectors. While Buenos Aires is the largest of the provinces, the choice of Mendoza offers several advantages. The first benefit stems from the fact that the economic mix of Mendoza is more representative of the typical region in Latin America than is that of Buenos Aires. Furthermore, firm sizes in Mendoza are also more characteristic, in the sense that the majority of the economy is comprised of small to medium sized firms. It also possesses both industries rooted in natural comparative advantages and ones which were forced to develop competitive advantages in order to survive.

The province of Mendoza is located in the central-eastern part of Argentina, 600 miles from Buenos Aires and just across the Andes mountains from Santiago, Chile. In area, Mendoza is roughly the size of Pennsylvania, though its population is much smaller, roughly 1.5 million. The industries which were targeted for study include beverages (wines, juices, bottled water), agro-industry (fruit and vegetable processing and packaging), metal-machinery, wood and furniture, petrochemicals, and industrial ceramics. These industries were chosen for several

reasons, the first being their dominance in the local GDP. Together they represent roughly one-third of the GDP of the province, with the remainder being comprised primarily of services and energy. In addition, these sectors are ones which produce tradable goods and as such have been most impacted by the market reforms of the 1990s. Lastly, these are industries in which one has the possibility of witnessing varying degrees of vertical integration. In the primary sectors, one sees firms which not only produce wine or process food, but which also grow the grapes and fruits and vegetables used as inputs. The same goes for other primary sectors such as petrochemicals and industrial ceramics. As for the more industrialized sectors, metal-machinery is one in which the firm can choose to produce all the sub-components to ones which simply assemble parts produced by subcontractors.

As for selecting only firms which were classified as having more than 10 employees, the rationale was that, even though most firms in the province fell below this mark, in order to have the potential to increase one's level of specialization, a minimum scale would be required. Furthermore, by excluding very small firms, it was possible to sample a much larger segment of the population. There were also very important logistical reasons for selecting this population. Among the most important of these is the fact that there was no one accurate list of firms active in each sector, particularly below the government's smallest classification level (< 10 employees). In its place three lists of firms over this hurdle rate from various government agencies including the Census, were combined. After the elimination of duplications and non-existent firms, the final population consisted of roughly 300 firms.

In order to obtain a significant number of firms, it was decided that using a mail survey would not be sufficient. The return ratio would inevitably have been too low to perform statistical analyses, due to the unreliability of the local mail system and the foreignness of receiving mail surveys for the majority of the respondents. As such, it was decided that the survey would be filled out in person. In order to prevent the possibility of surveyor bias, the questionnaire was designed as a mail survey with all questions being close ended. Sending individuals to the companies, however, guaranteed a much higher response rate.

Each firm in the sample was sent a fax introducing the project and explaining which types of information would be required during the interview. Thirty interviewers were then identified, all final year business administration students at the National University of Cuyo, and given a two hour training program to insure that each had a good understanding of all the survey questions. Again, however, all questions were close ended. The respondents themselves were in most cases the owner of the firm and if not its top commercial manager. The entire population was contacted, with the final number of firms completing the survey being 163, or roughly 55% of the original population of 300 firms. The average interview lasted one and one-half hours, with interviews being conducted between April and June 1996.

The questionnaire itself (administered in Spanish) was designed over a period of several months and pre-tested on a small sample of firms. The topics covered on the survey included general firm information such as size, ownership structure, age, etc, as well as specific sections on firm strategy and structure. In addition, there were targeted questions focusing on the competitive and sales environments.

Descriptive statistics on the final sample of firms are provided in Appendix B. As one might expect the majority of these firms are fairly small, with average sales of only six million dollars and most firms falling below that mark. They are fairly old (average = 31 years), however, with some firms having been founded in the middle of the 19th century. Likewise, all the firms in the sample are privately held, in most cases by local families though in a few instances foreign stakes have been taken in some of the companies, particularly in the wine industry. Completely foreign companies, however, were excluded from the sample. Financial performance varied across the sample. Unfortunately, as in most emerging markets, it was impossible to collect systematically reliable and comparable financial data on private companies. As a second best option, a proxy measure was used in which respondents were asked what costs their revenues were sufficient to cover (variable, fixed, and investment costs). Lastly in terms of their international scope, roughly 30 percent of the firms exported part of their production in 1995, while a slightly smaller percentage sold product to multinationals operating locally in Argentina.

While the profile described above is fairly representative of firms not only in Argentina but Latin America in general, there are not many so called "grupos" in the sample. Most firms are not involved in multiple unrelated businesses as is characteristic of the largest firms in Argentina. As such, one might question the generalizability of the survey findings to the population of larger firms. In part, this is why the case study which follows focuses on a firm at the other end of the size spectrum. However, as formulated, the hypotheses reasoned in this paper are not built upon factors which discriminate by firm size. In other words, the independent variables are ones which apply to both small as well as large firms.

5. OPERATIONALIZATION AND SURVEY RESULTS

Each of the hypotheses proposed earlier was tested using the survey data described above. In order to test the first hypothesis that firms should have reduced their levels of vertical integration following market liberalization, a question was placed on the survey asking whether the firm had increased, decreased, or not changed its level of outsourcing since the beginning of the liberalization program 5 years earlier. Of the 163 respondents to the survey, 46 responded by saying that they had increased their level of outsourcing (thus reducing their level of vertical integration), while only 11 claimed that they had decreased their level of outsourcing, with 106 reporting no change. The responses were coded as +1 if outsourcing was increased, -1 if outsourcing was decreased, and 0 if no change. As can be seen from Table 4, the one sample t-statistic of whether or not the average of the sample is significantly different from 0 is positive and highly significant at the .001 percent level, thus providing support for Hypothesis 1 that following market liberalization there was indeed a significant decrease in levels of vertical integration amongst the sample of firms. Though not the focus of this paper, it is also interesting to note that from a separate question it was shown that virtually none of the firms in the sample increased their level of horizontal diversification in this period.

Insert Table 4 Here

Given that support was found for the first and underlying hypothesis, a logistic regression model was used to test the remaining hypotheses. The dependent variable in the equation, OUTSOURCE, was modeled as a binary variable of whether or not the firm had increased its level of outsourcing. The reason for coding it as binary in this case was that Hypotheses 2-5 do not make any predictions as to why firms would “increase” vertical integration (i.e., it is not predicted that selling only to domestic firms would cause a firm to actually decrease its level of outsourcing from the previous period).

The first hypothesis regarding the importance of the reduction of inflation was based on a seven point Likert scale question in which individuals were asked to what extent had the lowering of inflation had a positive impact on their business (INFL), with 5.66 being the average. The higher the score, the more positive the impact. Likewise, respondents were asked to what extent the market reforms had increased the flexibility of their labor policies (LABRF), again responding on a Likert scale. In this case the average was 4.90. As for Hypothesis 4 which correlates increased access to foreign inputs with vertical integration, respondents were asked if the reduction of tariffs and other reforms had reduced the cost of importing inputs (IMCOST). 53 of the firms responded in the affirmative. Regarding the last hypothesis, MNEYES took on the value of 1 if the firm was selling to MNEs in Argentina in 1995 and 0 if it was not. In this case, 43 firms met the criteria.

In addition, a number of control variables were included in the model. The first of these, SALESLAR, took on the value of 1 if the firm’s average sales for the previous three years was at least \$5 million, which in this context represented large firms. A measure of firm size was included, as one could expect that the larger firms would be more likely to reduce their levels of vertical integration than smaller ones which as a result of their size will already tend to be more specialized. The remaining two control variables, AGRO and MET, are industry dummies for two

of the leading sectors in the sample, agro-industry and metal-machinery, the former being rooted in comparative advantages and the latter in competitive advantages. The correlation matrix for the variables in question is presented in Table 5.

Insert Table 5 Here

As can be seen from the results reported in Table 6, the overall model is highly significant with a Chi-Square of 25.0. Regarding the four propositions being tested, support was found for Hypothesis 2, 4, and 5 but not for Hypothesis 3. In other words, increased outsourcing was positively correlated with reduced inflation and lower import costs, but not necessarily with increased labor flexibility. The latter could be attributed to the fact that labor reform has been the slowest of all the reforms, as well as to the relatively small size of firms in the sample. The results also supported the idea that increased demand standards associated with sales to MNEs appear to favor higher levels of outsourcing. The latter was also modeled using a continuous variable of percent of sales to MNEs with no difference in statistical significance.

As for the control variables, the only one which was significant was firm size, larger firms being more prone to have increased outsourcing. Neither industry control was statistically important, something which could be explained by the fact that all the sectors included in the sample are tradeables and thus impacted by the reforms described earlier, therefore reducing cross-sectoral differences.

Insert Table 6 Here

As such, to summarize, the survey data provide statistical support for Hypotheses 1, 2, 4 and 5. There has in fact been a significant decrease in the level of vertical integration by firms in the sample since market liberalization in the early 1990s. Furthermore, the reduction in inflation and import costs appear to be particularly important in encouraging vertical de-integration. By contrast increased labor flexibility does not seem to have been a big factor, at least yet. Lastly,

facing heightened demand pressures, reflective of a more competitive environment, has been a strong factor in encouraging increased specialization.

While not a focus of this study, it is interesting to see what if any correlation exists between firms which increased their levels of outsourcing and performance. Using the performance measure described earlier (“Company revenues sufficient to cover?” 1. not even variable costs, 2. only variable costs, 3. variable plus fixed costs, or 4. also investment) one sees that a significantly greater number of firms which de-integrated fall into the top group of performers, than is the case for those firms which did not (Table 7). While 42 percent of the former had enough profits to make new investments, only 20 percent of the latter did. Overall, the correlation between outsourcing and performance was .23 ($p < .01$).

Insert Table 7 Here

The remainder of the paper will now turn to the case of Siderar, the former state-owned steel firm, to describe how it reacted to the changing environment in terms of its vertical integration strategy.

6. VERTICAL INTEGRATION AND THE CASE OF SIDERAR

Of all the industrial sectors affected by the reform policies of the Argentine government since 1989, the one which perhaps has been most impacted by the combination of privatization, deregulation, and trade liberalization is the steel sector. Since the beginning of the reform process, the industry has gone through a dramatic restructuring, one which has induced changes in a variety of industry aspects, including the extent of vertical integration. The magnitude of these changes are reflected in the experience of Siderar, the former state-owned steel producer.

In contrast to the previous empirical sample of relatively small firms, Siderar is an example of Argentina's large industrial firms, with revenues in 1996 of nearly one billion dollars. Choosing such a case allows one not only to test the extendibility of previous findings to larger (as well as privatized) firms, but also to explore the details of the change process itself. In particular, what will be shown is that while vertical integration overall may have decreased through the outsourcing of peripheral activities, integration into core activities actually increased so as to improve the company's value proposition. The case points to the importance of increased competition in downstream markets as the impetus for heightened vertical specialization, as well as changing policies in the upstream markets as enablers of this change.

The case study was conducted simultaneously with the survey research, and based on both primary and secondary data sources. In total 19 interviews were conducted with managers (including the CEO) from the main functional areas of the firm. In addition to the information obtained from these interviews, primary literature was obtained from Siderar. Secondary material was also collected, including outside research reports and academic articles on the steel industry in Argentina as well as press clippings.

6.2 Market Reform and the Vertical Integration of Siderar

Siderar came into existence in 1993 as a result of the privatization of the state-owned steel firm SOMISA, which until then was the only flat steel producer in the country allowed to have its own blast furnace, and thus a monopolist in the primary production of flat steel. The assets of the latter were acquired by one of Argentina's leading industrial groups, Techint, and merged with the group's own (but much smaller) steel manufacturer Propulsora, to form the new Siderar. Prior to privatization, SOMISA was heavily vertically integrated, purchasing only the raw iron and coal. It produced its own electricity and oxygen, ran its own port, managed its own transport fleet, as well as handled all the services inside the plant itself. This picture changed dramatically in the years following the creation of Siderar. Using the approach adopted earlier of looking at the impact of market liberalization on the downstream and upstream markets, one finds that while the

first encouraged Siderar to become more specialized in its vertical scope, the latter enabled it to make these necessary changes.

In the domestic downstream market, what one observes in the case of the Siderar is a dramatic increase in competitive pressures through the reduction of trade barriers as well as change in ownership structure. While the company was exposed to all the environmental changes taking place in Argentina described earlier, there were also a number of aspects of the reform process which were specific to the steel sector. Prime among these was a reduction in the tariff schedule for steel imports. Whereas tariffs were as high as 100% in the early 1980s, and remained as high as 40% in 1989, by 1990, the maximum tariff on steel stood at 5% for raw inputs, 13% for semi-elaborated products, and 24% for finished products. This was further reduced in subsequent years to 0% on raw inputs and semi-elaborated products and 18-23% on finished products (with rates slightly higher for non-Mercosur countries). The impact of these reductions in tariff barriers was a dramatic increase in the effective competition from imports.

As important as the reduction in tariff barriers in increasing competition has been the reduction of non-tariff and other regulatory barriers. The first major change was the removal of the D.G.F.M. (part of the Ministry of Defense) as the regulatory body of the steel industry, which had previously dictated domestic price levels. In addition, a pair of decrees (2284/91 and 1998/92) had major effects on the steel industry. The first of these repealed the industrial iron and steel promotion regime which had previously been in place. It also eliminated quantitative restrictions on the importation of iron and steel products. The need to obtain government authorization to import and/or export steel products was also done away with. Furthermore, the Decreto de Compre Nacional (Buy Argentine Decree) which gave special treatment to local firms in government purchases was also eliminated. All of these changes have caused the sector to be much more open today than at any other period in its recent history. One indicator of this is the fact that domestic steel prices of flat rolled coils fell 33 percent from December 1990 to December 1993, while international prices fell by only 9 percent (Azpiazu and Nochteff, 1994).

This pressure to increase the firm's competitiveness was accentuated by the Convertibility Plan of 1991 discussed earlier which pegged the currency to the US dollar. As a result of the level at which it fixed the exchange rate, Argentine production costs vis-à-vis imports increased instantaneously. By pegging the peso at a one-to-one rate, a rate which many believe overvalued the currency, local labor suddenly became much more expensive. Nominal wages in the steel sector increased 25 percent from April 1991 when the Plan was adopted until December 1993, thus making oversized payrolls even more of a liability. By contrast, the steel prices fell by 14 percent during the same period, resulting in an effective labor cost increase of 45 percent (Azpiazu and Nochteff, 1994). While this change would have a negative impact in the short-run, it did increase incentives for the firm to streamline its operations.

The increase in competitive pressures came not only from the threat of imports but also from the increase in demand standards associated with serving the new inflow of foreign direct investors into Argentina, as was predicted in Hypothesis 5. While SOMISA was criticized for poor quality and delivery problems, most of its customers were local firms with no viable option of importing steel. By contrast today more of the firm's sales are to world-class corporations such as General Motors and VW, who if they do not receive the quality they desire from Siderar will turn to the import markets. It has successfully fought off this threat by offering customers a wide array of product features beyond basic hot-rolled coils, including electrogalvanizing and prepainting.

The impact of these changes in the Argentine steel market were accentuated as a result of the change in ownership structure of the firm. Whereas SOMISA operated in an environment in which it was a monopolist with a soft budget constraint in a tightly closed economy, Siderar was now faced with hard budget constraints in a much more open market. This increase in pressure to operate at closer to world-class levels has been the driving force behind many of the changes which have occurred within the firm. As a central element of the take-over team's 100 day plan was the objective of focusing only on those processes in which the firm had a competitive advantage, in this case the production of flat steel. In support of this effort a plan was devised to streamline the firm's operations, as represented in Figure 1. Specific primary and secondary

activities were targeted for outsourcing. These included the operating of the port, oxygen plant, and thermoelectric facilities, as well as the handling of internal transportation, plant cleaning, scrap disposal, and food services. In addition, it was decided that the firm would also narrow its horizontal scope by eliminating the production of all non-flat products, primarily ingots and long products such as rails and bullets, products in which the firm had no particular expertise.

Insert Figure 1 Here

Both the reduction of vertical and horizontal scope depended on several factors changing in the upstream markets. The first of these was a change in the relationship with labor as discussed in Hypothesis 3. The focusing of activities by the firm required a dramatic shrinkage in the number of employees, particularly as SOMISA had often been used as an employment vehicle by the government. As part of the privatization scheme, contracts with labor were renegotiated to accommodate a reduction in the workforce, something which would have been unthinkable under the previous regime. In the end, the firm succeeded in reducing the original employment level of 12,700 by more than half.

The reduction in vertical scope also required the presence of supplier firms which could provide the necessary services more efficiently, particularly for the three largest concessions: the port, the oxygen plant, and the thermoelectric facility. The reduction in inflation as a result of the Convertibility Plan not only made the writing of contracts with suppliers easier but also created a business climate attractive for foreign direct investment (Hypothesis 2). With the economy growing at a rate of 7-8 percent per year in the early 1990s, Argentina reached the status of being the largest recipient of inward FDI in Latin America. This, combined with the abolishing of restrictions on inward FDI, the elimination of “Buy Argentine” legislation, and the reduction of tariffs on imports (Hypothesis 4), encouraged the entry of potential suppliers into the Argentine market. As such, when Siderar decided to "privatize," to use their words, the above services, they were able to attract bids from world-class international suppliers.

In the case of the oxygen plant, the decision came down to two French firms, Air Liquide and Praxair, with the former eventually winning the contract, with the condition of investing \$20 million in refurbishing the plant. With regards to the thermoelectric facility, the final two candidates were once again foreign firms, with Houston Industries of the US eventually winning the concession. Houston Industries, which committed to investing \$80 million in the existing plant, would provide Siderar with all of its electricity and vapor needs. It would also then sell whatever excess energy it produces to the local grid, with Siderar receiving a royalty. The last of the major concessions, the port, was given to a joint venture between Portia and Clark Chapman. Portia operates the Mersey Docks in Liverpool, while Clark Chapman is the part of the Rolls Royce group which manages port facilities. They beat out two other foreign firms (PNO and Sarros). Once again the initial investment was expected to be roughly \$30 million. Furthermore, there are plans to utilize the excess capacity of the port (which is connected via rail to areas such as Mendoza) to ship non-related products. Such operations would bring Siderar an extra \$10 million in annual revenue.

While the above discussion points to the outsourcing of peripheral or non-core upstream activities following privatization, the case of Siderar also points to how vertical scope in downstream core activities may in fact increase in an attempt to improve the company's value proposition. Aside from investments in quality throughout the value chain on the order of \$500 million, Siderar also has made an attempt to increase value added by shifting output towards more finished products such as pre-painted and electro-galvanized steel in place of simple hot-rolled coils. In a venture with General Motors, Siderar also agreed to build a stamping facility to provide finished car parts on a just-in-time basis. Another way of interpreting this change is as an increase in downstream horizontal integration along the lines of Ghemawat and Khanna (1998) and Khanna and Palepu (1999).

The firm has also increased its indirect presence in the value chain through the provision of bridging services to its small and medium-sized domestic customers. Whereas SOMISA was in many senses one of the weak links of the chain which extended from raw inputs to the final use of

steel products, today Siderar is in much more of a leader role, particularly with reference to domestic customers. It is now in a position to offer customers six month credit terms, something highly prized by small cash-strapped firms, and indicative of the fact that while capital markets may have improved as a result of reduced inflation, they are still not completely fluid. More interesting and innovative, however, has been the effort of Siderar's management to increase the competitiveness of its small and medium-sized customers. It has attempted to do so through a variety of programs, including the establishment of a six month management training program for the top managers of its smaller customers, the objective being to improve the skill base of those clients which are most threatened by the opening of the economy. Such a measure is both offensive and defensive, for while the objective is to help these firms grow, there is also the acknowledgment that in some cases this assistance may be necessary simply to maintain a firm's existing position in the face of growing imports. In other words, Siderar does not want its domestic customer base to disappear.

In addition to assisting their customers in the area of management training, Siderar has also at times provided them with technical assistance regarding institutional arrangements. Given its scale and the experience of Techint, Siderar is able to assist smaller clients which lack knowledge of how national and international institutions operate. Among the areas in which they have helped customers is dealing with the tariff and anti-dumping regimes. It is hoped that by sharing its institutional knowledge, Siderar can help protect their domestic customers and encourage their expansion abroad.

As such, while Siderar has reduced its presence in peripheral upstream activities of the steel value chain, it has actually increased its downstream presence so as to differentiate its value proposition to its customers. This model of increasing one's downstream presence by in some cases providing extra-ordinary services to customers, however, is not one which should be generalized to the population as a whole, for to do so requires having the necessary resources and size. It is a strategic model, though, which has the potential to be adopted more broadly by other large firms or grupos. In large part as a result of the restructuring efforts described above, Siderar's productivity is more than twice what it was under SOMISA and the firm is much more focused in its strategy and operations. Despite, or rather as a result of, this reduction in activities, the sales and profitability of the firm have increased dramatically, as can be seen from Table 8.

Insert Table 8 Here

7. CONCLUSIONS

Using the case of Argentina, this paper has focused on the effect of closed market and subsequent liberalization policies on the vertical scope of firms. It was reasoned that there are factors, relating to upstream and downstream market imperfections, which can influence the level of vertical integration adopted by firms. Arguments were put forth as to why these factors should in general encourage firms to have relatively high levels of vertical integration under closed market policies. With the liberalization of the economy, however, it was hypothesized that one would see a reduction in the vertical scope of firms. Changes in upstream markets would increase the opportunities for firms to reduce their vertical scope as a result of it being easier to write contracts, guarantee quality/ supply, adjust labor needs, and access financing. At the same time, changes in the downstream competitive arena would increase the need for vertical specialization and focusing on one's core competitive advantage. It was predicted that those firms most impacted by reforms relating to inflation, import costs, and labor flexibility would be more likely to reduce their vertical scope via increased outsourcing. In addition, those firms exposed to heightened demand pressures such as those selling to multinationals would in particular feel the pressure to increase their level of vertical specialization.

Using the case of Argentine market liberalization, which is attractive both for the breadth and speed of the reforms, each of the hypotheses proposed was statistically tested using a survey of 163 Argentine firms. Support was found for the main hypothesis that vertical integration should decrease following the opening of the economy. In addition, statistical support was found for the hypotheses regarding the impact of lower inflation, cheaper imports, and heightened demand standards on encouraging vertical specialization.

The survey results, which focused on small and medium-sized firms, were then complemented by a discussion of the case of Siderar, the large former state-owned steel firm. It was shown how changes in the areas mentioned above have encouraged a refocusing of the firm's activities on those aspects in which it has a competitive advantage. What the case and the results of the survey imply is the importance of market liberalization in providing firms not only with the conditions to allow for vertical specialization but also with the competitive pressures which make specialization a requisite for survival. The case of Siderar also pointed to an interesting issue that while firms may reduce their presence in peripheral aspects of the value chain, they may at the same time increase their presence in certain core areas so as to increase product differentiation.

Having pointed out the contributions of the research, there also exist a number of limitations to the study. Among these is the ability to measure vertical scope. While support was found using a relatively crude measure of the change in levels of outsourcing, a refined measure would possibly provide even stronger results. Unfortunately, the lack of publicly available data on firms in many emerging markets such as Argentina makes this a challenge, but still one worth pursuing. In addition, further comparisons with other reforming economies would be beneficial, particularly in cases which differ widely regarding initial institutional conditions.

Furthermore, while this paper has focused on the impact of market liberalization on vertical integration, a closely related subject which is also in need of further research is the impact of the former on the horizontal scope of the firm. Even though firms may reduce their levels of vertical integration, there are some firms which are expanding horizontally for a variety of reasons, including preferential access to privatization bids as well as capital (Ghemawat and Khanna, 1998; Khanna and Palepu, 1999). While in the course of this study both small and very large firms behaved similarly, it is not so clear that one would expect the same to be true for horizontal integration. Thus, a study of changes in horizontal scope across the firm size spectrum would provide a nice complement to the analysis of vertical integration presented in this paper.

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TABLE 1**Argentine trade reform: tariff rates**

	Oct. 1989	Oct. 1990	Oct. 1991	Nov. 1992	April 1994	April 1995
Average Tariff	22.3%	17.3%	9.3%	10.2	9.1	11.6
Dispersion ^a	12.9	5.4	8.9	5.1	5.7	7.2
Maximum Tariff	40.0%	24.0%	35.0%	20.0%	20.0%	32.0%
Most Frequent Tariff	37.0%	24.0%	na	na	na	10%
Average Statistic Tax ^b	na	3.0%	3.0%	10%	7.2%	2.4%

Notes: ^aDispersion is defined as the standard deviation of tariff rates.

^bThe statistic tax is an additional tax beyond the tariff which was originally imposed to reduce imports from Brazil but which as part of the Mercosur agreement is to be eliminated.

Source: Ministry of Economy.

TABLE 2**Argentine economic indicators: 1989-1996**

	1989	1990	1991	1992	1993	1994	1995	1996
Real GDP Growth Rate	-7.0 %	-1.3 %	10.5 %	10.3 %	6.3 %	8.5%	-4.6 %	4.3%
Interest Rates (deposits)	17,236 %	1518 %	62 %	17 %	11 %	8 %	12 %	7 %
PPI	NA	1567 %	110 %	6 %	2 %	0%	8%	4%
Domestic Credit (\$billion)	NA	22.3	41.2	50.9	61.5	68.2	71.7	76.5
FX Reserves (\$billion)	1.5	4.6	6.0	10.0	13.8	14.3	14.3	18.1
Unemployment	7.3 %	9.2%	6.3%	7.2%	9.1%	11.7%	15.9%	16.3%

Source: International Financial Statistics Yearbook, 1998

TABLE 3
Pre and post-reform factors affecting vertical integration

Market	Pre-Reform Environment	Post-Reform Environment
<i>Upstream Markets</i>	<ul style="list-style-type: none"> • High inflation increasing uncertainty in writing contracts • Small market size increasing asset specificity • Supply/ quality guarantees concerns • Restrictive labor laws discouraging changes • Limited access to supplier industry financing • Restrictions on imported inputs 	<ul style="list-style-type: none"> • Inflation dramatically reduced making pricing more transparent • Growth in domestic economy coupled with opening access to foreign markets • Access to foreign supply if necessary/ heightened domestic quality pressures • Labor law reform • Growth in domestic money supply/ lending • Dramatic reduction in import barriers
<i>Downstream Markets</i>	<ul style="list-style-type: none"> • Extension of monopoly power • Preferential access to resources by larger firms • Restricted foreign competition 	<ul style="list-style-type: none"> • Opening of markets to competition domestically and internationally. • Increase in competition from abroad



Increased Incentives for Vertical Integration



Increased Incentives for Vertical Specialization

TABLE 4
One sample T-test

Variable	N	Mean	Std. Deviation	Std. Error Mean		
OUTSOURCE	163	.2147	.5527	4.329E-02		
Variable	T-stat	df	Sig. (2-tailed)	Mean	95% Confidence Lower Upper	
OUTSOURCE	4.960	162	.000	.2147	.1292	.3002

TABLE 5
Descriptive statistics and zero-order correlations

	Mean	Min	Max	1	2	3	4	5	6	7
1. INFL	5.66	1	7							
2. LABRF	4.90	1	7	.21**						
3. IMCOST	.34	0	1	.22**	.18*					
4. MNEYES	.26	0	1	-.04	.06	.10				
5. SALESLAR	.12	0	1	.06	.14	.15	.09			
6. AGR	.14	0	1	.06	-.01	-.15	.04	.18*		
7. MET	.29	0	1	-.06	.05	.02	.05	-.15	-.26**	
8. OUTSOURCE	.28	0	1	.22**	.05	.22**	.24**	.20*	.02	-.07

TABLE 6
Logistic regression results

Dependent Variable = OUTSOURCE

Model	Chi-Square	df	Significance			
Model	25.02	7	0.0008			
Variable	B	S.E.	Wald	Sig	R	Exp(B)
INFL	0.413*	0.171	5.790	0.016	0.143	0.662
LABRF	0.100	0.139	0.518	0.472	0.000	1.105
IMCOST	0.734 [†]	0.414	3.143	0.076	0.078	2.083
MNEYES	1.101**	0.413	7.112	0.008	0.166	3.006
SALESLAR	0.924 [†]	0.563	2.698	0.100	0.061	2.519
AGR	-0.120	0.594	0.041	0.839	0.000	0.887
MET	-0.336	0.456	0.544	0.461	0.000	0.715
Constant	-0.901		0.641	1.975	0.160	

[†]p<.10, * p<.05, ** p<.01

TABLE 7
Performance of firms which increased outsourcing vs. those which did not

<i>Company Revenues Sufficient to Cover...</i>	<i>Increased Outsourcing?</i>	
	YES	NO
1. Not Even Variable Costs	13.3%	25.4%
2. Just Variable Costs	2.2%	9.6%
3. Variable Plus Fixed Costs	42.2%	44.8%
4. Also Investment	42.3%	20.2%
<i>TOTAL</i>	100.0%	100.0%

TABLE 8
Siderar vs. SOMISA performance indicators

	SOMISA	Siderar
Revenues (US\$ million)	552.6 (FY '93)	938.7 (FY '96)
Share of Domestic Market	56% ('92)	79% ('96)
Labor Productivity (MH/ton)	12.0 (Nov. '92)	4.8 (Sept. '96)
Production ('000 tons/year)	934 (FY '93)	1718 (FY '96)
Equity (US\$ million)	300 (June '93)	1223 (Feb. '97)
Net Income (US\$ million)	-9.7 (FY '93)	61.0 (FY '96)

APPENDIX A

Argentine economic policy history

1850-1930	<ul style="list-style-type: none"> - Liberal economic constitution. High international integration based on the export of agricultural products. - Per capita income in Top 10 worldwide. Equal to that of Germany and France, twice that of Spain.
1920s	<ul style="list-style-type: none"> - GDP growth = 7% per year - Inward foreign direct investment = 3.7% of GDP - Argentine exports = 3% of worldwide exports - Coefficient of openness (imports+exports/2 as % of GDP) = 33% - Government spending = 11% of GDP
1930	<ul style="list-style-type: none"> - Military coup: Beginning of protectionism. Increased favoritism for corporatist interests.
1940s	<ul style="list-style-type: none"> - Juan Perón elected president: union strength increases. - Protectionism increases and inward FDI drops. - Nationalization of infrastructure and foreign businesses. - Coefficient of openness drops to 12% - Government spending increases to 21% of GDP
1950s-1970s	<ul style="list-style-type: none"> - Closed market orientation strengthened through import substitution policies. - High relative costs and low productivity due to lack of economies of scale, excess product diversification, low levels of competition and high economic concentration - Increased international borrowing - GDP growth slows to 1-2% per year
1980s	<ul style="list-style-type: none"> - Debt crisis. Access to international capital markets dries up. - Little investment accompanied with capital flight. - Currency crisis leads to inflation of 5000% per month by late 1980s - GDP growth average -2.5% per year - Argentine exports account for only 0.3% of worldwide exports - Coefficient of openness drops to 6%
1989	<ul style="list-style-type: none"> - Carlos Menem elected president on the Peronist ticket. Undertakes the famous 180 degree turnaround, reverses statist policies, and begins liberalizing the economy.

APPENDIX B

Survey sample: Descriptive statistics

Sectors in Sample

Sector	Number of Firms
Agro-Processing	23
Beverages (Wine, Juice, Water)	47
Metal-Mechanics	47
Wood/ Furniture	27
Petro-Chemicals	7
"Mineria"	12
Total	163

Sales Distribution, 1995

Sales (\$ million)	0-.5	.5-1	1-3	3-5	5-10	10-20	20-50	50-100	100+	NA
# of Firms	31	35	39	14	10	5	2	0	2	25

Employee Distribution, 1995

# of Employees	<50	50-100	100-150	150-200	200-250	250-300	300+	NA
# of Firms	113	21	8	4	4	1	8	4

Size/ Age Summary, 1995

Average Sales	\$6.0 Million
Average Employment	68.0
Average Firm Age	30.8 Years