

## **The Azerbaijan Producers Survey: Dutch Disease and Financial Crisis**

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Azerbaijan has enjoyed a rapid run-up in government revenues from oil and natural-gas production in the period since 2005. Theory predicts that this run-up will trigger the Dutch Disease among Azerbaijani producers. In this paper, we report the initial findings of a survey of Azerbaijani producers designed to ascertain the importance of the symptoms of the Dutch Disease in Azerbaijan.<sup>1</sup>

The survey was administered in the summer of 2009. In structuring the questions for this survey, we thought it important to distinguish between any Dutch-Disease effects and any behavior caused by the international financial crisis. There are thus two sets of results to report – a first that chronicles the changes in microeconomic behavior due to the onset of the financial crisis, and a second that examines the differences in economic performance at the firm level that can be attributed to Dutch-Disease effects. As will be evident in our reporting of the results, there is substantial evidence of a shift in behavior at the firm level due to the financial crisis. There is less evidence that firm behavior in the sample can be distinguished as predicted in the Dutch-Disease literature.

The first section of this report provides some evidence of the scope of the oil and natural-gas windfall in Azerbaijan as well as the macroeconomic evidence of the financial crisis. The second outlines the theoretical predictions of the Dutch-Disease literature. The third section summarizes the responses of the survey questions and highlights the impact of the financial crisis on Azerbaijani firms. The fourth section examines the evidence of Dutch-Disease firm behavior in Azerbaijan. The fifth section concludes.

### **Oil, natural gas and financial meltdown in Azerbaijan.**

The Azerbaijan economy is currently heavily reliant upon its hydrocarbon (oil and natural gas) sector. These products contributed 47 percent of GDP, 68 percent of central-government budget revenues, and 92 percent of Azerbaijan's exports in 2008. Azerbaijan was a traditional oil and natural-gas producer within the Soviet Union, but the current scale of hydrocarbon production is the product of new discoveries that came on line in 2004 and that have increased the volume of production nine-fold (see Figure 1). This production surge will be temporary, as well, due to the

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<sup>1</sup> This survey was funded by a 2008 US Department of State Title VIII award administered by the Center for International Studies at the University of Delaware. Thanks to Vusal Qasimli for assistance in administering and reporting the survey, and to comments from a Title VIII Conference in Sofia, Bulgaria in July 2010.

limited nature of the deposits. Oil production is forecast to peak in 2012 and return to historical levels by 2024, while the surge in natural gas production will continue for another decade.

The dislocations of the massive run-up in oil and natural gas production recently are exacerbated by the large recent swings in prices for these products on the world market. While the price of oil in recent years averaged about \$45 per barrel, in 2008 this price rose to \$130 per barrel; it subsequently fell to \$30 per barrel before rising to its current level of about \$70 per barrel. Figure 4 illustrates this volatility over time. Natural-gas prices have followed a similar roller coaster in recent years.

Table 1 illustrates the wide swings in hydrocarbon-sector GDP over the period 2007-2009. National GDP increased by 25 percent in 2007, increased by 42 percent in 2008, and fell by 14 percent in 2009. Hydrocarbon-sector GDP was the source of these swings: it rose by 37 and 44 percent in 2007 and 2008 respectively, and fell by 27 percent in 2009. Growth in the non-hydrocarbons sectors was rapid in 2007 and 2008, but remained positive in 2009 due to growth in services. The income of the population and the monthly wage rose rapidly at the beginning of the period but positive growth of around 8 percent remained in 2009. Inflation had been significant in 2007 and 2008 (at 17 and 21 percent per annum, respectively) but fell to 1.5 percent per annum in 2009. Figure 3 illustrates the inflation rate as well as the nominal depreciation rate of the Azerbaijan currency, the manat, against the US dollar.

Revenues and taxes from oil-related activities contribute a majority of the central government's budget. The government has been able to continue an expansionary fiscal policy supported by this hydrocarbon revenue and has also been able to establish a sizeable sovereign wealth fund entitled the State Oil Fund (SOFAZ). Azerbaijan early recognized the importance of a sovereign wealth fund in stabilizing government expenditures. A 1999 presidential decree established SOFAZ as an "extra-budgetary institution," making it "accountable and responsible to the President of the Republic of Azerbaijan," while leaving no role for the parliament to scrutinize the president's unrestricted powers to determine its expenditures. As of 1 January 2010, SOFAZ had accumulated \$15 billion, and SOFAZ Executive Director Shahmar Movsumov predicts that by 2023 SOFAZ's funds may reach more than \$200 billion. Some SOFAZ funds have also been transferred to the state budget to be further used to cover the increase in the number of public sector employees and their salaries, to sponsor state investment projects, and to build up the military.

The financial crisis of 2008-2009 manifested itself in Azerbaijan primarily through the fall in hydrocarbons prices on the world market. The contribution of hydrocarbons production to GDP fell from 55.4 percent in 2008 to 47 percent in 2009 due to the revaluation of oil and natural gas sales. Non-hydrocarbon growth for 2009 remained positive, as indicated in Table 1, with the majority of that growth observed in services (trade, transportation, social services).

The consolidated budget surplus was estimated at 9 percent of GDP in 2009, compared to an exceptionally large 19 percent in 2008. The government adjusted for the fall in revenues by cutting non-priority spending and by financing only ongoing capital investment projects. As a result, the government managed to avoid a large increase in the non-oil fiscal deficit and was still able to increase social spending. The non-oil deficit of the consolidated budget remained high in 2009 at the level of 43 percent of non-oil GDP compared to 46 percent in 2008.

The adjustment has included some pain: permanent employment increased by less last year as compared to 2008, while the number of dismissals increased three times. The 2010 budget includes a fiscal stimulus through tax reductions: a cut to the corporate profits tax rate to 20 percent from 22 percent, a reduction of the maximum income tax rate to 30 percent from 35 percent, and a rise in the threshold at which small firms are subject to the simplified tax. The government's 2010 budget is based on a conservative oil price of \$45/barrel.

Azerbaijan banks and financial firms were not large holders of sub-prime mortgages or collateralized debt obligations from the US. Nevertheless, the financial meltdown did have consequences in Azeri financial markets. Figure 2 illustrates the liabilities of Azerbaijan commercial banks to foreign financial institutions. Commercial banks in Azerbaijan had borrowed abroad to meet soaring credit demand. As the figure illustrates, that demand went unsatisfied beginning in 2009. This subjected the Azerbaijan private economy to a “sudden stop” and led to the suspension of many debt-financed investment projects.<sup>2</sup>

### **The Dutch Disease.**

The term “Dutch Disease” originated in the Netherlands during the 1960s, when the high revenue generated by its natural gas discovery led to a sharp decline in the competitiveness of its other, non-booming tradable sectors. Despite the revenue windfall the new discovery brought, the Netherlands experienced a drastic decline in economic growth. This economic paradox has since been recognized as the situation in which a booming sector adversely affects the performance of other sectors of an economy, and in particular the non-booming tradable sectors. In the past two decades, a sizable literature on the Dutch Disease has examined the commodity booms experienced by some countries. The petroleum boom from 1973 to 1979 produced the most generally significant consequences.

The primary export boom causes an appreciation of a country’s real exchange rate which, in turn, negatively affects the other sectors of economy.<sup>3</sup> The real exchange rate can be defined as the ratio of prices of non-tradable goods to the prices of tradable goods. *The spending effect* occurs after high export earnings increase national income, thereby leading to the excess demand for tradable goods which will be satisfied by the rise in imports since prices of non-resource tradable goods are pegged to the international market by the small country assumption. However, the excess demand for non-tradable goods cannot be satisfied by imports because of high

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<sup>2</sup> For an explanation of “sudden stops”, see Calvo, Guillermo A., Alejandro Izquierdo, Ernesto Talvi (2003), “Sudden Stops, the Real Exchange Rate, and Fiscal Sustainability: Argentina's Lessons”, National Bureau of Economic Research, NBER Working Paper 9828.

<sup>3</sup> W. Max Corden, “The Dutch Disease,” *The Economist*, Nov. 26<sup>th</sup> 1977.

transportation costs. Hence, the prices of non-tradable goods, determined by domestic supply and demand, will start to rise. This might cause a resource flow from the tradable sector to the non-tradable sector because of the increase in the relative profitability of the latter. So, the spending effect alone might cause the output of non-oil tradable sector to decline while non-tradable sector will start expanding. The primary export boom can also entail the so-called *resource movement effect*. This can happen because the booming sector will offer higher wages, thus attracting the labor force from both tradable and non-tradable industries. Therefore, not only the production of non-oil tradable sector but also the output of non-tradable sector tends to contract; though, the latter effect is considered to be relatively insignificant.<sup>4</sup> Clearly, these two effects will reinforce each other and cause a decline in the output of traditional non-oil traded sectors. But the output of non-tradable industry will only expand in the case when spending effect outweighs the resource movement effect.

Political scientists, notably Terry Lynn Karl and Michael L. Ross<sup>5</sup>, write widely about the “resource curse,” identifying several negative effects of a country’s dependence on a single resource, especially petroleum. In countries afflicted with the curse, natural resources are regarded as the only drivers for development. The state is thus eager to control the oil and gas industry via a national monopolist, such as a state oil company. With the influx of foreign capital into the enlarged public sector of the economy, the state grows and becomes stronger (in its capacities), whereas private businesses largely depend on government contracts, which are usually distributed to regime collaborators in return for political support or loyalty. Crony capitalism, understood as the system in which members of the government distribute economic favors to their personal connections, thus flourishes. This system allows the oil-rich government to control the rest of the economy and to gain autonomy from the public by implementing its decisions without relying on public taxes. Since petroleum-rich countries are located mainly in the developing world where weak political and economic elites to grab their part of the oil revenue “pie.” Hence, petroleum revenues foster rent-seeking and corruption, and undermine the development of democratic institutions and free market structures. Moreover, oil inhibits democratic transition and helps authoritarian rulers survive through various mechanisms. The first is the rentier effect: Oil-rich states do not need to tax their citizens because they enjoy high profits from oil exports. They also do not have to listen to their people or represent them as there is “no representation without taxation.” Second, oil wealth leads to greater patronage spending, which, in turn, reduces pressures for democratization. Another aspect to the spending effect is that a rent-seeking government seeks to gain popular support by spending on social projects to diffuse opposition. Third is the group formation (or civil society) effect: oil revenues provide an authoritarian state with resources to prevent independent social groups from forming. Fourth, an

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<sup>4</sup> Al-Mabrouk, S., “Dutch Disease in a Small Open Economy: the Case of Oil in Saudi Arabia,” Colorado State University, Ph.D. dissertation, 1991.

<sup>5</sup> Terry Lynn Karl. *The Paradox of Plenty: Oil Booms and Petro-States*. Berkeley, CA: University of California Press, 1997.

• Terry Lynn Karl, “The Perils of the Petro-State: Reflections on the Paradox of Plenty,” *Journal of International Affairs* 53/ 1, 1999, pp. 31–48.

• Michael Ross, “Does Oil Hinder Democracy?” *World Politics* 53/ 3, 2001, pp. 325–361.

overabundance of oil revenues stimulates greater repression as it allows the oil abundant state to spend excessively on the armed forces, police and security agencies that can be used to silence pro-democracy forces. As a result, the state demobilizes society and deprives it of the ability and means to counterbalance state policy.

### **Risks for the economy of Azerbaijan.**

Though the global crisis posed some substantial risks for the economy of Azerbaijan, Azerbaijan closed the previous year with positive economic growth (unlike neighboring Caucasus countries) thanks to huge income reserves accumulated from exporting oil. The currency reserves of Azerbaijan economy played a “security cushion” role for the macroeconomic and financial stability during the crisis. In addition, the Central Bank of Azerbaijan also followed an anti-crisis monetary policy. It lowered reserve rates from the previous 15 percent to 2 percent. It also amended its regulations to include (a) a five-time increase in the amount of the insured deposits from 6 thousand AZN to 30 thousand AZN, (b) support to banks to help them repay their foreign debts, (c) tax concessions to banks and insurance companies for the purpose of recapitalization, (d) a mandated increase in financial reserves to safeguard against potential losses, and (e) 1.8 billion manat in foreign-exchange intervention to support the value of the currency. Despite these efforts, and in part due to the “bystander” position of the government with regard to the impact of the crisis, the economy of Azerbaijan still faces a series of risks:

- A rapid fall in the sustainable macroeconomic growth rate (especially, in non-oil GDP growth rate);
- Devaluation of national currency and increase in inflation rate;
- Destabilization of financial sector (significant worsening quality of banks’ credit portfolios and withdrawal of deposits, the worsening ability of banks to repay their debts, suspension of business and household credits);
- Rising unemployment.

### **The survey.**

The Economic Research Center in Baku, Azerbaijan conducted a survey of 238 producers during July-August 2009. The survey instrument was designed to address two important questions. First, has the recent increase in revenues to producers of Azerbaijani crude oil and natural gas led to changes in producer behavior and performance consistent with the predictions of the Dutch Disease theory? Second, did the crisis of 2008-2009 that began in the US and European financial markets have a measurable effect on the activities of Azerbaijani businesses?

The survey was distributed by surface mail to 500 businesses distributed proportionally among the districts of Azerbaijan. If no response was received within a fixed amount of time, the surveyors followed up with telephone calls and, in the Baku region, with personal visits to encourage participation. The final response rate of 48 percent compares favorably to response rates in the US for surveys conducted in similar fashion.<sup>6</sup>

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<sup>6</sup> Source: personal communication with Brian Burke, senior program officer, RTI Institute, USA.

The first five questions of the survey asked for characteristics of the firms: annual sales, employment, geographical location, number of years in operation, and type of product. The next four addressed areas of particular interest to the researchers: whether the firm was an exporter or an importer of intermediate inputs; and whether bribes were an ordinary cost of doing business in the respondent's industry.

The results to these questions illustrate the composition of our sample. As Table 2 indicates, nearly half of the firms in our sample has average annual sales of less than 150000 manat (less than \$200000 at the then-current exchange rate). The distribution of firms rapidly tails off, so that only 16 of the firms (less than 7 percent of the total) have average annual sales in excess of 1 million manat (\$1.3 million dollars). Table 3 indicates the employment characteristics of these firms. While 46 firms (19 percent) have 10 or fewer employees, there are 59 firms with 50 to 100 workers and 14 firms with more than 1000 workers. Table 4 illustrates that this is a fairly young group of firms, with 47 percent of those responding having been in business three years or less. Baku is the operating center for well over 168 firms (over 70 percent), as Table 5 indicates; this is in line with the concentration of Azerbaijan's population in the capital city. Table 6 lists the sector of the firms' final product. There are relatively few respondents in agriculture and mining, but there is a distribution of responses across the other sectors: communication, construction, finance, retail and services.

In Tables 7 and 8 we report the firms' participation in export markets and use of intermediate inputs. Nearly 60 percent of firms chose not to answer these questions, which we interpret as an indication that they should be included in the "zero percent" response. Only 43 of the firms (18 percent) report any sales revenue from export, while 61 firms (26 percent) report expenditures on imported raw materials and inputs. Tables 9 and 10 report responses on bribe-paying and corruption. Nearly 40 percent of respondents indicated "I don't know" as their response, and another 7 percent did not think any of their competitors paid bribes. Of the rest, the modal response was that nearly all competitors (80 – 100 percent of them) paid bribes as a cost of doing business. The next highest response was that **all** the competitors pay bribes.

The next set of questions in the survey asked about the firm's competitors. These were divided into two groups. The first group asked how many Azerbaijani competitors the firm faced in selling its major product or service, and what was the primary advantage of the firm in competing with those firms. The second group asked about foreign competition in serving the Azerbaijani market. Relatively few firms answered these questions; we interpret a non-response as an indication that these firms are in non-traded sectors (which we will verify in later analysis). The five questions in this group asked (1) does the firm face competition from imports in its major product or service, (2) are the imported goods available at lower price, (3) do tariffs and non-tariff barriers of the Azerbaijani customs raise the cost of competing imported goods, (4) the region of origin of these competing products, and (5) the advantages the local firms perceive in competing with foreign goods.

Table 11 reports that the respondent firms perceived their local market to be largely competitive, although there were frequent responses indicating a more oligopolistic structure. 103 firms, over half of those responding, indicated that they perceived more than 10 local competitors in selling their major product or service. At the other end of the industrial-organization spectrum, 14 firms

reported themselves in a monopoly position (no competitors), while 58 more indicated that they had 4 or fewer competitors. In Table 12, the firms reported their perceived advantages in competing with these local competitors – “higher quality” was the most common response, while “quicker response time” and “lower prices” were also frequently mentioned.

The responses on foreign competition are relatively limited. As Table 13 reports, only 31 firms reported having foreign competitors in selling their product or service line. Of these firms, Table 14 reports that only 7 indicated that the foreign goods were available at lower prices to their customers in Azerbaijan. Table 15 indicates that tariff and non-tariff barriers play some role in pushing up the prices of imported goods – the modal response was that imported prices were 20-30 percent higher due to this protection. When asked about regional source of foreign competition, we apparently got responses from many more than indicated that they faced import competition. As Table 16 reports, the most likely source listed by the responding firms was Turkey, while CIS countries and Western Europe were also frequently cited. Table 17 reports the firm’s perceived advantages vis a vis foreign competitors – here again, “higher quality” is the most common response.

The next section of our survey had an important goal: to separate out the impact of the financial crisis from the impact of the Dutch Disease in the behavior and performance of Azerbaijani firms. We have results to report, but they are unfortunately for a limited subsample – we seem to have lost the intent of the section in translation.

The first question of this section asked the firm to designate a month and year during 2008 and 2009 in which the firm was first affected by the world economic crisis. We then asked the respondents to use that month and year to define the beginning of the crisis period for the firm. We asked them to describe pre-crisis and crisis-period growth in a number of performance indicators: annual sales, employment, selling price, market share, investment. We also asked about the firms’ success in borrowing, the use of materials and inputs, and the growth in the price of foreign competitors’ products.

Table 18 reports the firms’ indications of the beginning of the financial crisis for them. We did not get an indication of the month in the response. For 21 firms, the crisis began in 2008; for 32 additional firms the crisis began in 2009. The remainder (78 percent) did not respond, which we interpret as an indication that the firm has not yet felt the impact of the financial crisis.

At this point, the survey design was perhaps too opaque. We asked that the firms not having experienced the crisis respond to the “before crisis” questions, but they for the most part seem to have chosen not to do so. Thus, for the remainder of this section, the results are based upon a sample of about 60 firms (25 percent of the total).

The dichotomy between pre-crisis and financial-crisis periods is illustrated starkly in Table 19. Sales revenue for the firms was largely growing in the pre-crisis periods, with 53 respondents (88 percent) in the top three growth categories. For sales revenue during the financial crisis, 49 respondents (89 percent of a smaller group) indicated growth in the bottom three (negative) growth categories. That result is mirrored in Tables 20 and 21. In Table 20, employment growth pre-crisis was reported to be in the top three growth categories by 49 respondents (89

percent), while during the financial crisis 41 firms (88 percent of an even-smaller group) were in the bottom three (negative) growth categories. Table 21 reports the evolution of product prices: pre-crisis the sales prices were rising strongly, with 44 firms (90 percent) in the top three price-rise categories, and during the financial crisis 46 firms (92 percent) reported price declines in the bottom three categories. In Table 21, firms reported rising market share pre-crisis, with 52 firms in the top three growth categories; during the financial crisis, 43 firms reported declining market share in the bottom three growth categories.

The investment choices of firms were also strongly affected by the financial crisis. In Table 22, we see that in the pre-crisis period less than 20 percent of respondents indicated between 0 and 5 percent expenditure on investment as a share of current sales. In the financial-crisis period, the firms with that response represent over 50 percent of respondents. The use of raw materials and intermediate inputs is little changed with the crisis, as indicated in Table 23, although we have very few respondents for this question.

The financial crisis changed the evolution of foreign prices. As Table 24 indicates, 67 firms responded for the pre-crisis period (just about the right number if we include both exporters and import competitors), and 87 percent of those indicated that the prices of foreign competitors had either increased or stayed the same. In the financial-crisis period only 38 responded, but of those 57 percent indicated that prices of foreign competitors had either stayed the same or decreased.

With regards to access to credit, we first asked whether firms were successful at borrowing for investment and working-capital needs. Table 25 reports the responses for the pre-crisis and the financial-crisis period. There were more respondents wishing to borrow in the pre-crisis period (97 vs. 35). Nearly the same number in each period was successful in obtaining financing from commercial banks or were unsuccessful in getting financing. The sharp declines were in those who financed investment and working capital out of retained earnings (from 37 to 18) and in borrowing from owners (from 24 to 5). For those successful in borrowing, the cost of borrowing rose on average in the crisis period. Table 26 reports those results. Note that pre-crisis, 59 percent of respondents paid less than 10 percent interest on that borrowing, while during the financial crisis 86 percent of respondents paid more than 10 percent interest on borrowing.

Finally, we asked about profitability of the firm during the pre-crisis and financial-crisis periods; the results are reported in Table 27. Of the 86 firms responding for the pre-crisis period, 57 percent report either no change or positive change in firm profits. Of the 60 firms responding in the financial-crisis period, 95 percent report either no change or negative change in profits.

We asked two sets of questions about the share of wages in production costs and the share of government subsidies in production costs. No more than 30 firms responded to these questions. We suspect that the former question was written poorly, and the latter question concerns a relatively small share of the sample. We exclude these entirely from our report of the survey results.

### **Dutch Disease.**

Our theories of the Dutch Disease predict that in the pre-crisis period we will observe a dichotomy in responses to our survey questions. During a Dutch Disease period, there will be a

run-up in the prices, employment and profitability of non-traded firms.<sup>7</sup> At the same time, there will be a reduction in employment and profits in traded firms, as they are squeezed by the increase in wages and input prices and the reduction in the prices of competing foreign goods.

We consider two methods for separating traded from non-traded firms. The first method is by sector of operation. We include among the traded goods those in manufacturing and agriculture (34 firms), while in non-traded goods those in the communications, construction, FIRE, retail and services sectors (155 firms). The one mining firm and the 21 “other” firms are excluded from this measure. The second method is to aggregate the 43 firms reporting exports with the 31 firms reporting facing a foreign competitor in the Azerbaijani market, yielding 65 separate firms with reported international trade or foreign competition.

The first method (the definition of “non-tradedness” by sector) is commonly used in the literature, but as Table 28 indicates it may not be appropriate for the firms surveyed here. The top panel of the table divides the sample of 211 firms that designated their sector into “T Report” and “NT Report” groups. The “T Report” group reported either exports or competition from foreign goods in the domestic market, while the remaining firms are placed in the “NT Report” group. As is evident from the table, manufacturing and agriculture are among the most “traded” of sectors by percentage of firms reporting traded activity, but they include large numbers of firms who report no traded activity. By contrast, the retail and construction sectors also report relatively high percentages of firms with traded activity. The second panel summarizes the correlation between the two measures of “non-tradedness” – positive, but with 69 of 211 firms having a “traded” classification under one method and a “non-traded” classification under the other.

Table 29 reports the results of chi-square tests based on contingency tables. In each test, the distributions of firms according to the characteristic reported in the first column are compared statistically between “traded” and “non-traded” firms. The chi-square statistic (with degrees of freedom listed in parentheses) indicates the likelihood that the two groups are drawn from the same distribution, and the right column reports the probability value associated with that statistic. There is no significant difference between the firms in the two groups in their annual sales revenue, in their reported number of competitors or in their perceived need to pay bribes. However, there are significant differences in the other three characteristics. For example, “traded” firms are smaller. While the traded firms are only 28 percent of the sample, they are over half of the firms that reported 10 or fewer workers. “Traded” firms are also relatively older; while they are 28 percent of the total sample, they are only 15 percent of the firms reported in business three years or less. They are also less likely to be in Baku; only 15 percent of the firms in Baku are “traded” firms, as opposed to 28 percent for the whole sample. A relatively large number of “traded” firms report operations in Gence.

When we consider the survey responses to the question on the financial crisis in light of our Dutch-Disease decomposition of firms, we observe a striking fact. Of the 53 firms that answered

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<sup>7</sup> There will also be a run-up in profits and employment at firms in the “booming” sector. As we have only one mining company in the sample, we won’t be able to disentangle that result.

the question about the onset of the financial crisis, 27 were “traded” firms. Of the 185 firms that did not answer, only 38 were “traded” firms. As a result, the smaller sample with which we address our questions on Dutch Disease and financial crisis is roughly equally split between “traded” and “non-traded” firms. Of the firms that did answer, “traded” firms disproportionately reported the crisis beginning in 2008 (15 of the 21 indicating 2008 as their answer), while “non-traded” firms disproportionately reported 2009 (20 of the 32 indicating 2009 as their answer).

We compare “traded” and “non-traded” firms for the evolution of sales revenue and employment in the period since 2006 in Table 30. Theory predicts that the “non-traded” firms will observe increased sales price, sales revenue and employment, while “traded” firms will observe steady prices, reduced sales and reduced employment. This is not evident in the data, either in the pre-crisis period or the financial-crisis period. The first group of results in Table 29 refers to the pre-crisis answers in the survey. As is evident there, the tendency pre-crisis was to observe rapid annual growth in sales price, sales revenue and employment, and the two groups of firms were insignificantly different in their enjoyment of this. During the financial-crisis period, reductions in price, sales and employment were most common – and this pattern of reduction was observed in both “traded” and “non-traded” firms.

These conclusions of similarity between “traded” and “non-traded” firms are replicated when we redo the analysis using the definition of “traded” based upon the sector of operation of the firm – those results are not reported, but are available upon request.

This “non-result” of Dutch Disease differences among firms is surprising. Table 24a provides us with one potential explanation – according to the firms facing import competition, government tariff and non-tariff barrier policy was successful at increasing prices of imports at the same time that the Dutch Disease should have been putting domestic firms at a price disadvantage vis a vis foreign competitors. The potential explanation is this: firms that produce tradable goods facing import competition may in fact be facing the same incentives as non-traded producers, since commercial policy is providing protection that offsets Dutch-Disease effects. If this is true, then we should see significant differences in the way that export firms and import-competing firms respond to questions about the Dutch Disease symptoms. To investigate this, we divided the “tradable” group into separate categories of “exporters” and “import competitors”. We then redid the hypothesis testing of Table 29 for these two subcategories.<sup>8</sup>

We discovered something quite important: import-competing firms in our sample are indistinguishable from non-traded firms in most dimensions. These firms have been in operation for longer periods, on average, and they tend to be observed more often outside Baku. Otherwise, their responses to our survey questions are statistically indistinguishable from those of the firms producing non-traded goods. These import-competing firms are insulated from the competitive pressures of the Dutch Disease, with protectionist commercial policy as the likely tool to assure this. Exporting firms, by contrast, exhibit significantly different characteristics.

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<sup>8</sup> The contingency tables and statistics associated with these tests are not reported here, but are available from the authors.

They are less likely to pay bribes; they are also significantly more likely to have market power within Azerbaijan. They suffered significantly less in terms of lost profits in the financial crisis.

### **Conclusions and extensions.**

We began this research with a simple hypothesis: that firms in Azerbaijan will exhibit symptoms of the Dutch Disease in the period since 2006. The symptoms differed by the classification of the firm as “traded” or “non-traded”. We undertook a research survey with 238 firms to test this hypothesis. Our results allow us to reject this hypothesis: according to the survey responses, firms have had very similar experiences in recent years whether in the traded or non-traded sectors.

We then examine an alternative hypothesis: that the import-competing firms among the “tradables” are in fact behaving identically to the non-traded firm. We find little evidence to distinguish the non-traded firms from the import-competing firms; the differences that exist are in terms of length of time in continuous operation and geographic location, but not in behavioral responses. Export firms among the tradables do report behavior significantly different from non-traded and import-competing firms.

We draw these conclusions with caution. The sample of firms surveyed ultimately proved very small for conducting a statistical test of this type. We began with a sample of 500 firms, but through a combination of non-response and omission of responses to critical questions even among those who filled in the survey we ended with between 50 and 60 observations relevant to the hypothesis test. This is quite small for the type of testing we hoped to do.

The survey also highlights the large change in experience among the firms between the period before the financial crisis and the period since the crisis began. While here again the number of respondents to these questions is quite low, the change in experience and behavior is so striking as to be unmistakably significant. The financial-crisis period has been a time of severe retrenchment for all firms in Azerbaijan. This is no different than in other emerging economies; although the effect in Azerbaijan is relatively less because of its less-integrated stance vis a vis the world’s capital markets and the expanding oil and gas production in the country. The global financial crisis affected Azerbaijan’s economy both horizontally – impact on the markets (commodity, financial, currency, money-credit, bonds etc.) and vertically – impact on economic agents (government, businesses and households). The challenge in the mid- and long-term is to significantly diversify the economy, employment, budget and export revenues, ensure the long-term sustainable macroeconomic development and increase the international competitiveness of the national economy. In view of this challenge, one of the core objectives is to strengthen the financial and macroeconomic stability that appear to be the major cornerstones of sustainable economic development and to eradicate the negative impact on economy, business environment and households caused by the crisis.

Figure 1: Forecast and actual Azerbaijan oil production

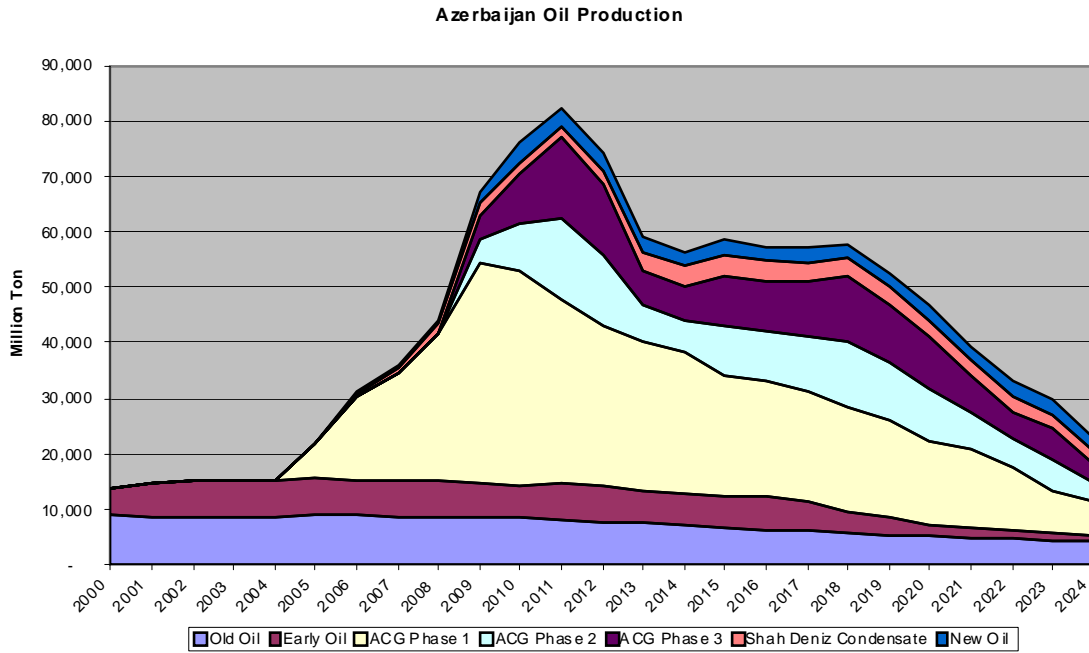
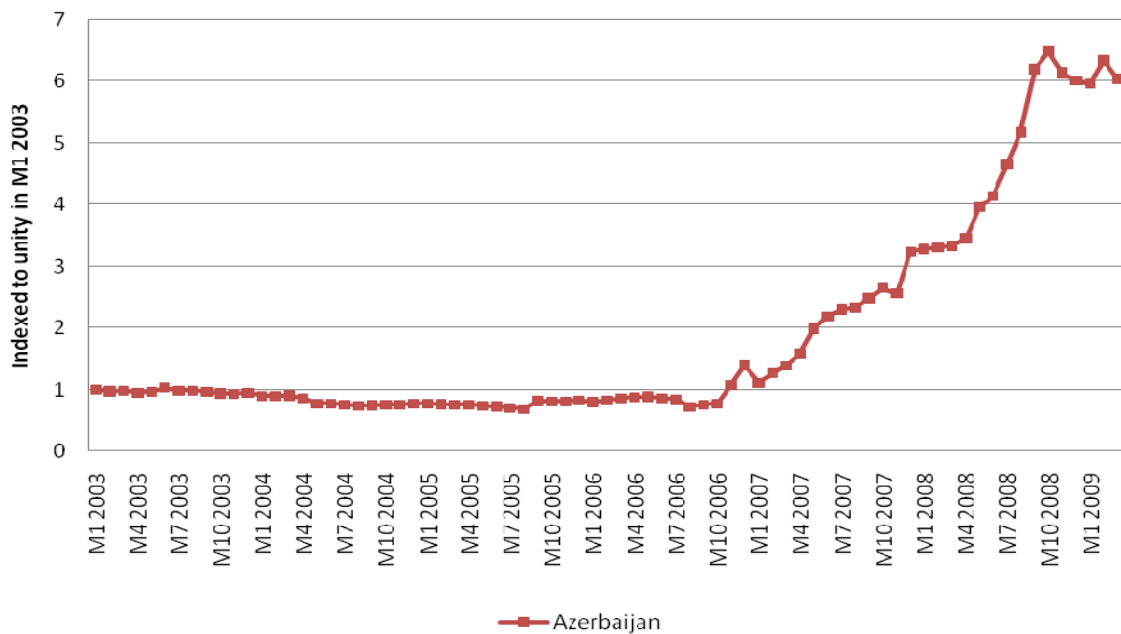
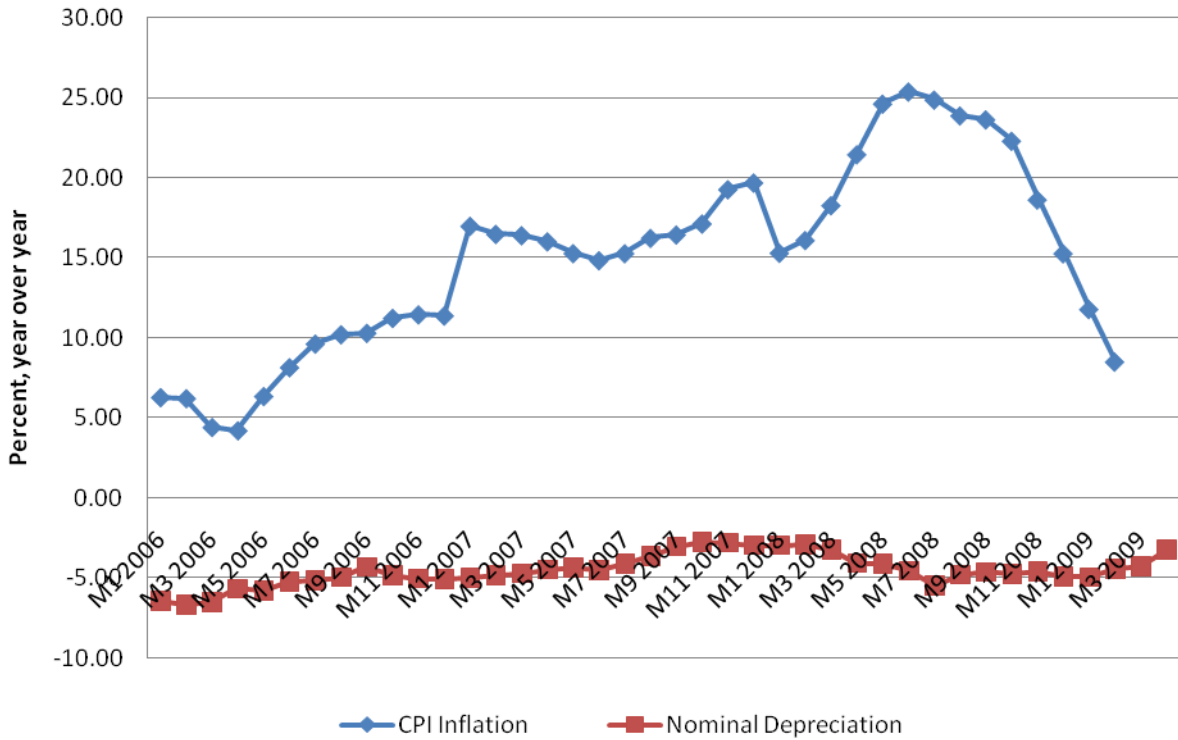


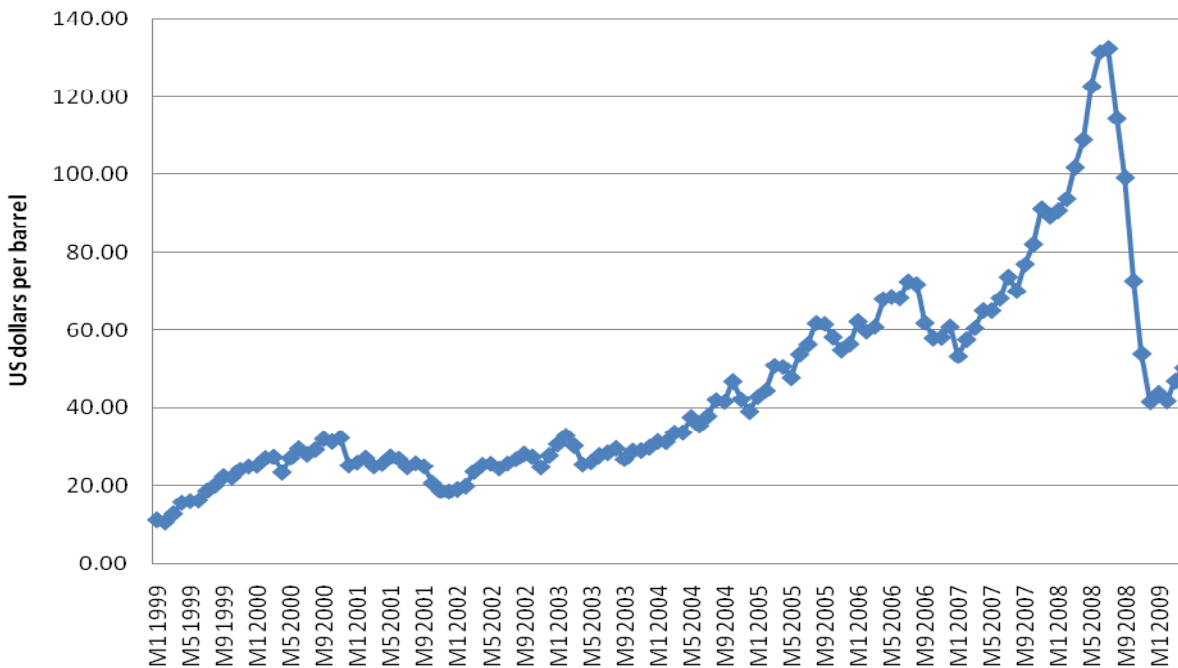
Figure 2: Commercial Bank Liabilities to Non-residents in Azerbaijan



**Figure 3: Azerbaijan Inflation and Nominal Depreciation**



**Figure 4: Average Price per barrel of crude oil**



**Table 1. Main macro-economic indicators (2007-2009)**

Years	2007	2008	2009
GDP, mln.AZN	28360.5	40137.2	34578.7
Growth rate, %	25.0	41.5	-13.9
GDP per capita, \$	3474	5603	4874.1
Hydrocarbons GDP, mln.AZN	15411.7	22251.3	16257.3
Growth rate, %	36.8	44.3	-26.9
Non-hydrocarbons GDP, mln.AZN	9533.9	15197.2	15683.2
Growth rate, %	11.4	59.4	3.2
Inflation, % Average yearly	16.7	20.8	1.5
Income of population, growth rate, %	40.3	37.8	8.0
Average monthly wage, AZN	214.0	274.4	298.0
Growth rate, %	42.0	28.0	8.6

Source: Azerbaijan State Statistical Committee

Table 2: Our consolidated firm (including all product lines) has average annual sales over the past five years of:

s1	Frequency	Percent	Cumulative Frequency	Cumulative Percent
less than 150 thousand manat	113	50.90	113	50.90
150 thousand to 500 thousand manat	66	29.73	179	80.63
500 thousand to 1 million manat	27	12.16	206	92.79
1 million to 5 million manat	6	2.70	212	95.50
5 million to 10 million manat	3	1.35	215	96.85
10 million to 50 million manat	4	1.80	219	98.65
50 million to 100 million manat	2	0.90	221	99.55
over 100 million manat	1	0.45	222	100.00

Frequency Missing = 16

Table 3: Our consolidated firm (including all product lines) has average annual full-time-equivalent employment over the past five years of:

s2	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1 - 10 workers	46	19.41	46	19.41
10 - 50 workers	44	18.57	90	37.97
50 - 100 workers	59	24.89	149	62.87
100 - 250 workers	42	17.72	191	80.59
250 - 500 workers	12	5.06	203	85.65
500 - 1000 workers	20	8.44	223	94.09
more than 1000 workers	14	5.91	237	100.00

Frequency Missing = 1

Table 4: Our firm has been operating continuously under current ownership for:

s3	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Less than 1 year	8	3.57	8	3.57
1 year to three years	97	43.30	105	46.88
Three years to five years	77	34.38	182	81.25
Five years to 10 years	28	12.50	210	93.75
More than 10 years	14	6.25	224	100.00

Frequency Missing = 14

Table 5: The district of Azerbaijan in which the largest shares of our firm's finished product or service (as measured by sales revenue, and including all product lines) is produced is:

s4_1	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Baku	168	70.59	168	70.59
Sumqayit	14	5.88	182	76.47
Gence	19	7.98	201	84.45
Lenkeran	5	2.10	206	86.55
Quba	6	2.52	212	89.08
Masalli	7	2.94	219	92.02
other	19	7.98	238	100.00

Table 6: Our major products or services (i.e., with largest percentage of sales) are in the

s51	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Agricultural sector	4	1.90	4	1.90
Communications sector	15	7.11	19	9.00
Construction sector	16	7.58	35	16.59
Financial, Insurance and Real Estate sector	36	17.06	71	33.65
Manufacturing sector	30	14.22	101	47.87
Mining sector	1	0.47	102	48.34
Retail sector	33	15.64	135	63.98
Services sector	55	26.07	190	90.05
Other sector	21	9.95	211	100.00

Frequency Missing = 27

Table 7: Our consolidated firm in the past year received the following share of sales revenue from exports:

s61	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0%	57	57.00	57	57.00
Less than 5 percent	2	2.00	59	59.00
5 percent to 10 percent	5	5.00	64	64.00
10 percent to 20 percent	13	13.00	77	77.00
20 percent to 50 percent	9	9.00	86	86.00
more than 50 percent	14	14.00	100	100.00

Frequency Missing = 138

Table 8: Our consolidated firm in the past year spent the following share of total operating costs on import of raw materials and inputs from other countries.

	s7	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0%		38	38.38	38	38.38
Less than 5 percent		5	5.05	43	43.43
5 percent to 10 percent		10	10.10	53	53.54
10 percent to 20 percent		21	21.21	74	74.75
20 percent to 50 percent		9	9.09	83	83.84
more than 50 percent		16	16.16	99	100.00

Frequency Missing = 139

Table 9: When you consider all your competitors in Azerbaijan, what percent of them find it necessary to pay bribes to government officials or to private agents to conduct business?

	s8	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0%		17	7.20	17	7.20
0-20%		22	9.32	39	16.53
20-40%		20	8.47	59	25.00
40-60%		14	5.93	73	30.93
60-80%		18	7.63	91	38.56
80-100%		32	13.56	123	52.12
all		25	10.59	148	62.71
I don't know		88	37.29	236	100.00

Frequency Missing = 2

Table 10: When you consider all your competitors in Azerbaijan, payments of bribes represent what percent of their total operating costs?

	s9	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0%		17	7.33	17	7.33
0-20%		44	18.97	61	26.29
20-40%		23	9.91	84	36.21
40-60%		20	8.62	104	44.83
60-80%		20	8.62	124	53.45
80-100%		10	4.31	134	57.76
all		13	5.60	147	63.36
I don't know		85	36.64	232	100.00

Frequency Missing = 6

Table 11: In our major product or service, we face this many competing Azerbaijani firms selling the same or nearly equivalent product or service.

a1	Frequency	Percent	Cumulative Frequency	Cumulative Percent
none	14	7.11	14	7.11
1 or 2	24	12.18	38	19.29
3 or 4	34	17.26	72	36.55
5-10	22	11.17	94	47.72
more than 10	103	52.28	197	100.00

Frequency Missing = 41

Table 12: Our primary advantages in competing with Azerbaijani suppliers in our product lines are (check all that apply)

a7_1	Frequency	Percent	Cumulative Frequency	Cumulative Percent
no competitor			5	100.00
Long-term supply contracts with customers			17	100.00
Long-term business relationship with customers.			24	100.00
Higher quality or more consistent quality than competitors			91	100.00
Quicker response time to customer demands			73	100.00
Lower prices			41	100.00
other			4	100.00

Table 13: In our major product or service, we face competition from imported goods and services (i.e., not produced in Azerbaijan) in at least one of our product lines.

a2	Frequency	Percent	Cumulative Frequency	Cumulative Percent
yes	31	48.44	31	48.44
no	33	51.56	64	100.00

Frequency Missing = 174

Table 14: The imported goods or services in the product line described in the previous question are available to the purchaser at lower prices in manat than are goods from our consolidated firm.

a3	Frequency	Percent	Cumulative Frequency	Cumulative Percent
yes	7	21.21	7	21.21
no	26	78.79	33	100.00

Frequency Missing = 205

Table 15: Tariffs and non-tariff barriers levied by the government on imported goods raise the cost of these competing goods imported into Azerbaijan on average by

a4	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0-5%	2	5.41	2	5.41
5-10%	6	16.22	8	21.62
10-20%	11	29.73	19	51.35
20-30%	13	35.14	32	86.49
more than 30 %	5	13.51	37	100.00

Frequency Missing = 201

Table 16: From which region of the world have the competitors come who have expanded the foreign market penetration in the markets for our product lines? Choose as many as apply.

a5_1	Frequency
CIS	54
Turkey	77
Eastern European countries	4
Western European countries	33
Middle East countries	1
Non-CIS Asian countries (e.g., China, Korea,)	7
Iran, Pakistan, India	7
Arabian countries	2
North America and Latin America	3

Table 17: Our consolidated firm's advantages in competing with foreign suppliers in our product lines are (check all that apply)

a6_1	Frequency	Percent
Long-term supply contracts with customers.	10	100.00
Long-term business relationship with customers.	10	100.00
Higher quality or more consistent quality than foreign competitors	67	100.00
Our foreign competitors pay tariffs on their goods coming into the country	9	100.00

Table 18: The financial performance of our consolidated firm was affected by world economic crisis beginning in

v1	Frequency	Percent	Cumulative Frequency	Cumulative Percent
2008	21	39.62	21	39.62
2009	32	60.38	53	100.00

Frequency Missing = 185

Table 19a: The aggregate annual revenue from sales of all our product lines: before crisis

	v2	Frequency	Percent
Rose by more than 30 percent		21	35.00
Rose by less than 30 percent but more than 5 percent		21	35.00
Rose by less than 5 percent or fell by no more than 5 percent		11	18.33
Declined by more than 5 percent but by no more than 30 percent		3	5.00
Declined by more than 30 percent but less than 50 percent		3	5.00
Declined by more than 50 percent		1	1.67

Frequency Missing = 178

Table 19b: The aggregate annual revenue from sales of all our product lines: after crisis

	v2_1	Frequency	Percent
Rose by more than 30 percent		3	5.36
Rose by less than 30 percent but more than 5 percent		2	3.57
Rose by less than 5 percent or fell by no more than 5 percent		2	3.57
Declined by more than 5 percent but by no more than 30 percent		33	58.93
Declined by more than 30 percent but less than 50 percent		10	17.86
Declined by more than 50 percent		6	10.71

Frequency Missing = 182

Table 20a: Employment measured in full-time-equivalents for all product lines,  
and including non-production workers: pre-crisis period

	v3	Frequency	Percent
Rose by more than 30 percent		12	21.82
Rose by less than 30 percent but more than 5 percent		18	32.73
Rose by less than 5 percent or fell by no more than 5 percent		19	34.55
Declined by more than 5 percent but by no more than 30 percent		4	7.27
Declined by more than 30 percent but less than 50 percent		2	3.64

Frequency Missing = 183

Table 20b: Employment measured in full-time-equivalents for all product lines,  
and including non-production workers: after-crisis period

	v3_1	Frequency	Percent
Rose by more than 30 percent		2	4.26
Rose, by less than 30 percent but more than 5 percent		2	4.26
Rose by less than 5 percent or fell by no more than 5 percent		2	4.26
Declined, by more than 5 percent but by no more than 30 percent		28	59.57
Declined by more than 30 percent but less than 50 percent		10	21.28
Declined by more than 50 percent		3	6.38

Frequency Missing = 191

Table 21a: For this question, consider only the product or service that generated the greatest annual sales revenue for our firm, on average, over the last three years. The price in manat at which we can sell this product to our customers: pre-crisis period

	v4	Frequency	Percent
Rose by more than 30 percent		8	16.33
Rose by less than 30 percent but more than 5 percent		28	57.14
Rose by less than 5 percent or fell by no more than 5 percent		8	16.33
Declined by more than 5 percent but by no more than 30 percent		3	6.12
Declined by more than 30 percent but less than 50 percent		2	4.08

Frequency Missing = 189

Table 21b: For this question, consider only the product or service that generated the greatest annual sales revenue for our firm, on average, over the last three years. The price in manat at which we can sell this product to our customers: financial crisis period

	v4_1	Frequency	Percent
Rose by more than 30 percent		1	2.00
Rose by less than 30 percent but more than 5 percent		1	2.00
Rose by less than 5 percent or fell by no more than 5 percent		2	4.00
Declined by more than 5 percent but by no more than 30 percent		40	80.00
Declined by more than 30 percent but less than 50 percent		2	4.00
Declined by more than 50 percent		4	8.00

Frequency Missing = 188

Table 22a: Consider only the product line that generated the greatest annual sales revenue for our firm, on average, over the last three years. Our consolidated firm's market share (measured in percentage points): pre-crisis period

	v5	Frequency	Percent
Rose by more than 30 percent		14	25.93
Rose by less than 30 percent but more than 5 percent		24	44.44
Rose by less than 5 percent or fell by no more than 5 percent		14	25.93
Declined by more than 5 percent but by no more than 30 percent		2	3.70

Frequency Missing = 184

Table 22b: Consider only the product line that generated the greatest annual sales revenue for our firm, on average, over the last three years. Our consolidated firm's market share (measured in percentage points): in financial crisis period

	v5_1	Frequency	Percent
Rose by less than 30 percent but more than 5 percent		1	1.96
Rose by less than 5 percent or fell by no more than 5 percent		7	13.73
Declined by more than 5 percent but by no more than 30 percent		33	64.71
Declined by more than 30 percent but less than 50 percent		5	9.80
Declined by more than 50 percent		5	9.80

Frequency Missing = 187

Table 23a: The average annual investment in new plant and equipment undertaken by our consolidated firm represents the following percent of average annual sales:pre-crisis period

v6	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0-5%	9	19.57	9	19.57
5-10%	18	39.13	27	58.70
10-15%	11	23.91	38	82.61
15-20%	3	6.52	41	89.13
more than 20%	5	10.87	46	100.00

Frequency Missing = 192

Table 23b: The average annual investment in new plant and equipment undertaken by our consolidated firm represents the following percent of average annual sales: in financial crisis period

v6_1	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0-5%	25	51.02	25	51.02
5-10%	6	12.24	31	63.27
10-15%	10	20.41	41	83.67
15-20%	4	8.16	45	91.84
more than 20%	4	8.16	49	100.00

Frequency Missing = 189

Table 24a: The amount of increase in prices of foreign competitors caused by tariffs and non-tariff barriers has changed in the following way (pre-crisis period)

v10	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Increased significantly	20	29.41	20	29.41
Increased just a bit	26	38.24	46	67.65
Not changed	13	19.12	59	86.76
Decreased just a bit	6	8.82	65	95.59
Decreased significantly	2	2.94	67	98.53
Not applicable - no pre-2006 experience	1	1.47	68	100.00

Frequency Missing = 170

Table 24b: The amount of increase in prices of foreign competitors caused by tariffs and non-tariff barriers has changed in the following way (financial crisis period)

v10_1	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Increased significantly	8	21.05	8	21.05
Increased just a bit	7	18.42	15	39.47
Not changed	5	13.16	20	52.63
Decreased just a bit	8	21.05	28	73.68
Decreased significantly	9	23.68	37	97.37
Not applicable - no pre-2006 experience	1	2.63	38	100.00

Frequency Missing = 200

Table 25: When our consolidated firm needed financial capital for investment or working capital, we

v7	Pre-crisis		Financial crisis	
	Frequency	Percent	Frequency	Percent
Successfully borrowed from commercial banks	26	27	24	45
Successfully financed the investment from sources internal to the firm	37	38	18	34
Successfully financed through borrowing from owners	22	23	5	9
Were unsuccessful	7	7	4	8
Other	5	5	2	4
Total	97	100	53	100
Missing	141		203	

Table 26a: If we were successful in borrowing, the cost of borrowing (in manat, or after conversion to manat if in foreign currency) as percent of amount borrowed was (pre-crisis period)

v8	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0-5%	12	37.50	12	37.50
5-10%	7	21.88	19	59.38
10-15%	2	6.25	21	65.63
15-20%	4	12.50	25	78.13
more than 20%	7	21.88	32	100.00

Frequency Missing = 206

Table 26b: If we were successful in borrowing, the cost of borrowing (in manat, or after conversion to manat if in foreign currency) as percent of amount borrowed was (financial crisis period)

v8_1	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0-5%	2	6.90	2	6.90
5-10%	2	6.90	4	13.79
10-15%	10	34.48	14	48.28
15-20%	6	20.69	20	68.97
more than 20%	9	31.03	29	100.00

Frequency Missing = 209

Table 27a: During the recent experience with consumer price inflation in Azerbaijan, our consolidated firm experienced (when compared to pre-2006 experience): pre-crisis period

d3	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Significantly lower profits	8	9.30	8	9.30
Somewhat lower profits	28	32.56	36	41.86
No change in profits	23	26.74	59	68.60
Somewhat higher profits	20	23.26	79	91.86
Significantly higher profits	7	8.14	86	100.00

Frequency Missing = 152

Table 27b: During the recent experience with consumer price inflation in Azerbaijan, our consolidated firm experienced (when compared to pre-2006 experience): financial crisis period

d3_1	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Significantly lower profits	24	40.00	24	40.00
Somewhat lower profits	30	50.00	54	90.00
No change in profits	3	5.00	57	95.00
Somewhat higher profits	2	3.33	59	98.33
Significantly higher profits	1	1.67	60	100.00

Frequency Missing = 178

**Table 28: Comparing the two measures of “non-tradedness”.**

**Panel 1**

	NT report	T report	Total
Agricultural sector	<b>2</b>	<b>2</b>	<b>4</b>
Communications sector	10	5	15
Construction sector	9	7	16
Financial, insurance and real estate	30	6	36
Manufacturing	<b>17</b>	<b>13</b>	<b>30</b>
Mining	1	0	1
Retail	17	16	33
Services	46	9	55
Other	14	7	21
Total	146	65	211

**Panel 2**

	NT Report	T Report	Total
NT Sector	127	50	177
T Sector	19	15	34
Total	146	65	211

**Table 29: Testing for differences between “Traded” and “Non-traded” firms**

	$\chi^2$	Probability drawn from same distribution
Are these distributions of firms significantly different between the two groups of firms?		
In Sales Revenue?	5.75 (7)	0.57
In Number of workers?	23.01 (6)	0.00
In period of continuous operation?	22.13 (4)	0.00
In geographic location?	54.05 (6)	0.00
In perceived need to pay bribes?	5.72 (7)	0.57
In number of Azerbaijani competitors?	6.34 (4)	0.18

<b>Table 30: Evolution of Sales Revenue and Employment, by “tradedness”</b>			
	Rose more than 5 percent	Steady	Fell more than 5 percent
<b>Pre-crisis</b>			
<i>Sales revenue</i>			
T Report	23	7	3
NT Report	19	4	4
Total	42	11	7
<i>Employment</i>			
T Report	15	12	3
NT Report	15	7	3
Total	30	19	6
<i>Sales price</i>			
T Report	17	4	3
NT Report	19	4	2
Total	36	8	5
<b>Financial crisis</b>			
<i>Sales revenue</i>			
T Report	3	1	26
NT Report	2	1	23
Total	5	2	49
<i>Employment</i>			
T Report	4	1	18
NT Report	1	1	22
Total	5	2	40
<i>Sales price</i>			
T Report	0	2	23
NT Report	2	0	23
Total	2	2	46