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TO EXPORT OR NOT: THE PROSPERITY CHOICE OF AN ARMENIAN FIRM

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ABSTRACT

This paper highlights the impact of the *sunk costs* of market entry on the export behavior of an Armenian firm. Through a combined application of various analytical methods, we find that minimization of the *sunk costs* in Armenia implies avoidance of foreign market entry risk to sell final consumption goods abroad. About 80% of manufactured exports from Armenia consist of intermediate products which, as a rule, are traded on a wholesale basis and do not require sophisticated market entry strategies. We identify that most part of exports originating in Armenia, including intermediate and final consumption commodities rely on Diaspora wholesalers abroad and we consider this a good background for further expansion of business connections and thus exporting. We further find that in sectors of production listed in exporting, structure of *sunk costs* of foreign market entry is reduced, that is, the number of components to *sunk costs* is limited and the non-excluded components minimized. With today's stated priority to expand export base and taking into consideration unfavorable exchange rate behavior, diversification of approaches to lower burden of various components to *sunk costs* should be on agenda. Upgrading firm-level management culture, introducing innovative products as well as the Government's commitment to consistently reduce the administrative cost burden on the national firms and to ensure their access to low-cost finance are certainly of importance as well.

INTRODUCTION

In a small-size economy with limited internal markets, a successful firm would seek its sales expansion abroad. Among necessary and desired consequences, there are strengthening internal markets and sustaining national economic growth in the face of global risks exposure. In this sense, factors influencing an Armenian firm's decision to take risks of selling its products in foreign markets are of a particular interest.

Terminology used in this field of study employs a notion of so-called *sunk costs*, i.e. firm-specific fixed or one-time market entry costs that affect the export decision-making and subsequent export behavior of a firm. These include *inter alia*, costs associated with market research, marketing and advertising, upgrading of product quality, and accumulating information on demand in foreign countries.

Empirical literature has so far failed to reject the following two-fold hypothesis: (i) external factors' (e.g. exchange rate) negative dynamics are not particularly influential when the firm is already an exporter, i.e. *sunk costs* incurred previously contribute to the persistent export behavior of a firm in the present period; and (ii) internal factors (e.g. capital stock, plant age, ownership type, FDI and size of the firm) are decisive for the persistence of a firm's exporting status, i.e. operational costs influence the stability of participation. Some of the sources are mentioned in the "Selected Literature Review" section.

Initially, we intended to test these on Armenian reality via use of panel data on Armenian firms collected continuously by the National Statistical Service (NSS) in a dynamic discrete response model. That proved to be hardly possible due to (i) uncertain NSS policy on providing data for independent research and, more importantly, (ii) methodology discrepancies between NSS major databases that made reliability of datasets compiled by it dubious. With insufficient data stock, we

confined our search to that of **valid factors for a firm's decision to export** and, thus, turned to a combination of approaches. Some of the findings therein support the *sunk costs*-related hypotheses.

In the first part of this paper, we provide a review of Armenia's external economic activity before and after the breakup of the USSR in order to attain an in-depth understanding of the factors tested in the empirical models. This analysis is particularly important as firm-specific factors, including age, ownership, management structure and style, and cost factors require careful interpretation in light of radical shifts in the economic organization in the first years of independence. This part of the paper is based on an extensive literature review and our own computations.

In the second part, we employ cross-sectional discrete response modeling to test the significance of a number of factors highlighted in the empirical literature for an Armenian firm's decision to sell abroad. For that, we used the databases of the Business Environment and Enterprise Performance Survey (BEEPS) initiated by EBRD and WB Group in 1999 and continued in 2002 and 2005. A short reference is made to NSS data on Armenian companies' exporting and financial indicators generalized by types of economic activity.

ECONOMIC DEVELOPMENT IN TRANSITION

In the post-Soviet context, economic development of Armenia is an extensive record of substantial structural shifts (Table 1). Changes in the country's international status, property ownership, transportation routes, national currency, demography and workforce composition, decision-making process, international cooperation options, trade transactions' scale and nature, energy supply organization[1], and even de-facto state borders occurred within a very short period and shaped *inter alia* the current search for ways to economic integration.

General Overview of Soviet Armenia's Economy

Between 1960 and 1987 Armenia's economy grew by 9.3 times[2]. With a 25,000-strong R&D workforce and about 50% of output consisting of exports, Armenia was one of the most industrialized economies of the former Soviet Union with energy, metallurgy, machine-building and the chemical industry as leading producers. Armenia's main export strengths laid in the manufacturing sector, the share of which in the country's export was close to 95%. Light industry commodities were the most traded items (37.7%), followed by machinery (25.2%), food (14.3%) and chemicals (10%)[3].

Notwithstanding the relative openness of trade (103% of GDP in 1987)[4], Armenia's external linkages with non-FSU countries were underdeveloped and made 2% to 2.5% of the country's total exports, where more than 70% of the exports shipped to Russia[5]. Likewise, most of the Soviet republics were effectively cut off from the rest of the world, pursuing from 86% to 93% of their external trade with each other. The only exceptions were Russia and Ukraine, whose intensity of

[1] E.g., collapse of the *Trans-Caucasian Power Grid* (which was a constituent part of the integrated FSU power grid system) had a transient but severe impact on the performance of Armenian firms.
[2] Based on Avanesyan and Freinkman, 2003
[3] Ibid.
[4] Ibid.
[5] Tarr (1993), Avanesyan and Freinkman (2003).

non-FSU trade was 39% and 18%, respectively[6]. The trade among the former sister republics dropped from $320 billion in 1991 to $20 billion in 1993, or by 94%[7], which, due to a certain statistical discrepancy, some sources quote to be in the range of 83% to 84%[8].

Table 1: 1995-2005 Structure of GDP[9] by sectors

Economy Sector	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Industry	21.8	29.1	24.3	23.4	22.5	19.9	21.2	21.9	20.1	18.8	19.3	19.2	19.1	17.2	15.1
Agriculture	48.7	43.5	40.7	34.8	29.5	30.8	27.0	23.2	25.5	23.4	21.5	22.5	19.0	18.7	18.0
Construction	3.9	6.7	6.5	7.4	8.1	8.0	8.3	10.3	9.7	12.6	15.7	15.6	19.7	23.7	24.7
Transport & Communication	5.6	4.2	4.3	6.1	7.5	6.9	7.6	7.2	7.0	5.9	5.8	5.8	5.8	6.3	6.3
Trade*	2.1	4.5	9.5	9.5	9.0	8.7	9.0	9.4	10.2	10.6	10.9	11.2	11.1	11.4	10.9
Other Services	17.9	12.0	14.7	18.8	23.4	25.7	26.9	28.0	27.5	28.7	26.8	25.7	25.3	22.7	25.0

* before 2006: Trade and Catering, in 2006 NSS made a transition to NACE

***Source**: Quarterly National Accounts of Armenia 1992-2001, National Accounts of Armenia 2007, Socio-Economic Situation of the RA in January-March 2008, National Statistical Service*

In Armenia a sharp decline in trade flow was combined with allegedly one of the most dramatic output falls in the former Eastern Bloc. In a single year (1992), Armenia's GDP contracted by an unprecedented 53%[10], which was slightly more than Armenia's pre-transition level of exports. The disintegration of the FSU with subsequent disruption of trade and economic linkages among the republics, aggravated with loss of a number of large industrial plants in the North due to the 1988 earthquake, drove the Armenian manufacturing sector into complete devastation. In 1991, the share of the manufacturing sector in GDP was 48.6%, while in 1993 it was only 30.7% of GDP[11]. In absolute terms, this contraction may appear even more pronounced, given that Armenia's 1993 GDP was half the level of its 1987 GDP. By 1998, the share of manufacturing in GDP was less than 20%. The change in industrial output was a negative 69.2%[12] between 1990 and 2000. For a more extensive insight into the Soviet era economy as the basis for current developments, see Annex 1.

Immediate and Longer Term Ramifications of the Collapse

In the transition period, sectors that used huge explicit and implicit subsidies, but returned overpriced and substandard manufactured goods (light industry, food, chemicals), suffered severely from market forces while trade in underpriced energy resources and other raw materials were expected to benefit largely from the price liberalization and opening of the market. In the case of Armenia, the external demand contraction had also a political dimension as 40% of Armenia's industrial exports served the needs of the FSU's defense industry, whereas Russia opted for local supplies for its defense needs following independence[13]. Driven no more by political will, raw material and inter-enterprise supplies were cut short because of prices, long distances, growing

[6] Based on Michalopoulos and Tarr (1992).
[7] Metcalf (1997).
[8] Freinkman, Polyakov and Revenco (2004).
[9] In our view, the GDP structure is distorted by several common misconceptions of national accounting: (i) ignored components in each sector, e.g. a farmer's devotion to his land in Agriculture, (ii) ignored lag in Construction's effect on investment expansion and infrastructure development, and (iii) exclusion of shadow economy volume.
[10] EBRD (2000), p. 4 in Aslund.
[11] Keith Griffin et al. based on official data (UNDP 2002).
[12] Keith Griffin (UNDP 2000), based on official data.
[13] Avanesyan, Freinkman, 2004.

inter-enterprise arrears, and political and economic instability. A new dimension of these developments became Armenian national currency; introduction of the Dram led to the emergence of both exchange rate risks and additional costs in trade transactions.

At that time, the dispute over Nagorno Karabagh escalated into an armed conflict between Armenia and Azerbaijan, bringing the double effect of energy shortages and economic blockade; these have had a more lasting effect through the exaggerated transport costs that Armenia has had to pay for shipping its freight through Georgia's ports. Around 15% (compared to 7% in the developed nations)[14] of Armenia's export costs are transport costs. Shipment of a 20-foot cargo container to Georgia is $1,100 and $1,700 to Hamburg through Georgia. Cargo shipments from Georgia to the East Coast of the U.S. are twice cheaper than shipments to the same destination from Armenia to Georgia ($3.500). [15] At the same time, the potential of air transport remains under-utilized.

Independent Armenia introduced formal trade and customs barriers. Although customs fees have been kept flat at 0% and 10%, and applied only to 30% of imported goods, customs control has evolved as an arbitrary and corrupt service to the detriment of domestic suppliers of imported goods and domestic producers of exported goods. Armenian exporters are formally exempt from customs duty payments, but unofficial customs taxes amount to 6% to 13% of total transport costs to Georgian ports.[16] While the exporters are also entitled to VAT refunds on the export shipments, on average it took 145 days for companies to claim their refunds in 2004, and they received 15% less than they were entitled to.[17]

Access to finance has been continually identified as one of the most serious constraints for entrepreneurial development.[18] Financial services have been limited to bank loans at extremely high interest rates (27.6% in 2000).[19] Although interest rates on bank loans have gone down to 14.8% in 2004 and to 13.3% in 2007, micro-crediting has been flourishing. Funding needs up to USD 1 million hardly have been met. Banks often opt for arbitrary discretion to issue loans to their business clients; trade finance and letters of credit are little used.

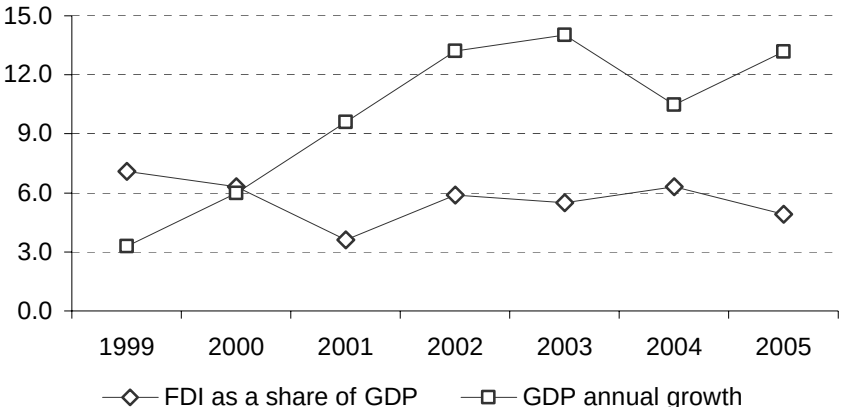
Private Ownership Challenges and FDI

The privatization campaign launched in the mid-1990s brought little efficiency gains as it was not designed to introduce a new management culture or perceptions. Suffice it to say that some 1,500 privatized firms were already bankrupt by the mid-2000s because of the inability of the privatized firms (i) to upgrade their management style (including costs, resources and product management); (ii) to secure affordable funding sources for ongoing investment needs and equipment renewal, (iii) to secure safe raw material supplies and (iv) to upgrade product quality, as well as (v) to expand and maintain a presence in the domestic and export marketplaces. Thus, about 33.7% and 9.5% of EU-destined exports in 1997 and 1999, respectively, consisted of ferrous and non-ferrous metal scrap[20]. Within this paper, we do not address shadow economy issues, although they still constitute a significant part of the domestic economy[21].

[14] Armenia Competitiveness Assessment Report, 2004, USAID/Nathan Associates.
[15] Ibid.
[16] Armenia, The Caucasian Tiger, World Bank Report, 2006.
[17] Ibid.
[18] FIAS 2003, World Competitiveness Report, 2007.
[19] Iarossi, Saliola, Tanzillo, 2005.
[20] *Armenia Trade Diagnostic Study (*based on COMTRADE data), World Bank, 2002.
[21] See, e.g. Armenia, The Caucasian Tiger, World Bank Report, 2006 or B. Tunyan, 2005.

The influx of Western managerial "know-how" was limited as the foreign investors remained skeptical about the risks of investing in Armenia. The country's FDI proceeds, generated through the privatization process, made USD 1. 7 billion for the entire period of 1995-2006[22] and only 7.1% of GDP in 1999, and 3.6% and 4.9%, respectively, in 2001 and 2005 (Figure 1). In the first years of transition, FDI seemed the major available investment option; however, its annual levels were much below the level of pre-transition investment (12.7% of the pre-transition GDP) [23] directly allocated by the sectoral ministries of the Soviet Union. Light industry, machine building and R&D each attracted less than 1% of the total FDI during the entire period. Chemistry's share was only a cumulative 1.2% during 1999-2006, but below 1% during the first years of privatization. The only exceptions in the industrial sector were mining and food (including beverages), which attracted 14.4% and 12.1% of FDI, respectively, during 1999-2006 (Annex 2). About half of the FDI in the initial period was invested in infrastructural projects. This trend was upheld also during the period of 1999-2006, when infrastructural projects accounted for about one-third of the total FDI. Wholesale trade, and hotel and restaurant businesses were also considered relatively safe FDI targets (16% of total FDI in 1995-2000).[24]

Figure 1: Armenia 1999-2005: FDI as a share of GDP, in percents



Source: *National Statistical Service*

Remarkably, most of the non-infrastructural small investments into the export-oriented manufacturing and non-manufacturing sectors – including gems, textiles, processed food, ICT and tourism – were spearheaded by the Diaspora Armenian groups. Their investment for the 1994-2004 period amounted to a quarter of the total FDI attracted by the economy during that same period.[25]

Deviation from the export-oriented industrial growth path

The initial rebound in the economic growth was supported by significant donor funding (7% of GDP in 1995-99)[26] of Armenia's market reform initiatives, followed by large-scale infrastructural restructuring projects in the late 1990s and early 2000s. These developments helped shift the economy's heavy bias away from subsistence agriculture – which slightly exceeded half of GDP in

[22] Own estimates based on World Bank and NSS data.
[23] Avanesyan, Freinkman, 2003.
[24] *Trade Diagnostic Study*, World Bank 2002.
[25] Manuk Hergnyan, Anna Makaryan, *The Role of the Diaspora in Generating Foreign Direct Investment in Armenia*, CRRC Working Paper, 2006.
[26] Armenia, Growth Challenges and Government Policies, World Bank, 2001.

1993 and decreased gradually to a quarter of GDP by 2000 – and boost initial trade- and telecom-oriented growth (Table 1). Currently, Armenia is listed among the leaders in ICT outsourcing[27].

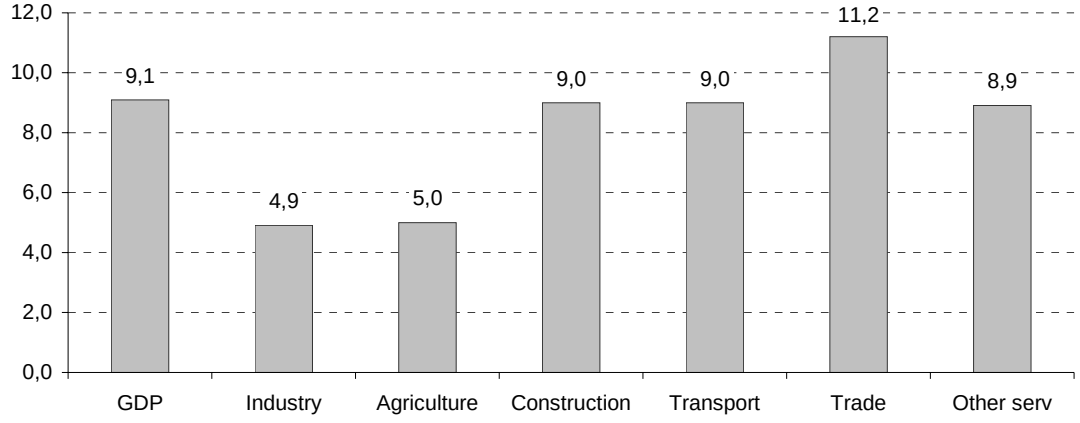
The share of the industry in GDP has since fluctuated in the 20% range (Table 1). Initially, the energy and the food sectors appeared to be the survivors with shares in industrial output at 16.2% and 32% in 1995, and 33.5% and 43.3% in 1998, respectively. As other industrial sectors and, particularly, the originally export-oriented ones, failed to catch up, the initial year-on-year industrial growth remained unimpressive at only 2.6% in 1995 and at a discouraging -2.2% in 1998 (Table 2).[28] A moderate export-oriented industrial growth occurred following the recovery of the primary mining sector, whose share in the industrial output made up 6% in 1999, but steadily grew to 21.7% in 2003. The share of petrochemicals also rose in the industry, reaching 4.8% in 2003, up from 3.1% in 1999.

Table 2: 1996-2006: GDP and Sectoral Growth over the Previous Years, in percents

Indicator/ Economy Sector	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
GDP	5.9	3.3	7.2	3.3	6	9.6	13.2	14.04	10.47	13.19	13.4
Industry	1.1	1.3	-2.2	5.2	6.4	3.8	13.9	15.6	2.2	7.4	-1.1
Agriculture	2	-4.5	12.9	1.3	-2.3	11.6	3.8	4.2	14.2	11.2	0.4
Construction	25.2	3.9	10.6	7.7	28.4	14.5	41.5	45.5	15.3	35.1	37.2
Transport and communication	17.1	9.2	1.4	0.8	-0.6	16	-1.7	8.3	19.6	13.2	16
Trade	12.5	5	6.7	9.8	8.3	15.5	19.7	14.1	10.6	9.6	11.7
Other services	14.6	3.2	2.6	4.5	9.1	5.3	12	8.6	12.6	11.2	14.5

***Source**: 2001-2007 Annual Statistical Yearbooks, National Statistical Service of Armenia*

Figure 2: 1996-2006: Average Sectoral Growth, in percents



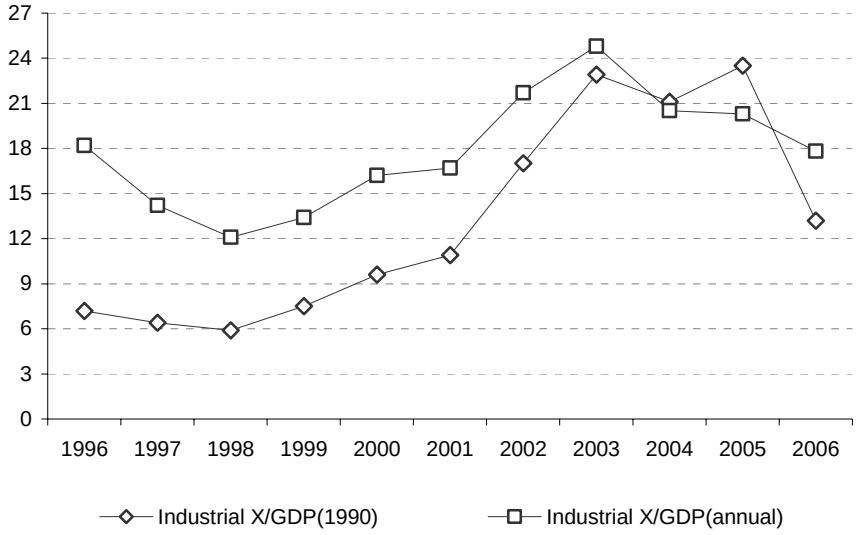
***Source**: National Statistical Service*

The stunning economic growth reported in the 2000s is largely attributable to the growth in the non-tradable construction sector, whose average growth rate for the period 2000-2006 reached 31%. The 10-year average growth rate for the construction sector was 9%, behind only 11.2% of the trade sector growth. Agriculture's average 10-year contribution was only 5%, although the sector remained the dominant economic sector for almost the entire decade. The growth generated by the

[27] See, e.g., Enterprise Incubator Foundation Report, 2007 or Global Outsourcing Report, 2005.
[28] National Statistical Service 2001 Annual Yearbook.

industrial sector was modest in the 2000s, averaging to 6.9% for the period 2000-2006. The industrial growth in the first years of 2000 may unmistakably be explained by the restoration of gas supplies to residential households and FDI attracted by the mining sector. Industrial exports on average remained at 18% of GDP for the period of 1996-2005, compared to the annual 50% in the pre-transition period. On average, this corresponded to the 13% level of the 1990 GDP[29] (Figure 3).

Figure 3: Industrial Exports as a Share of Annual and 1990 GDPs



***Source**: World Bank and National Statistical Service*

Figure 4. Armenia: 1997 -2006 Armenia Exports Growth, percentage

***Source**: National Statistical Service and Ministry of Finance and Economy*

Major shift in the structure of the merchandise exports

After the initial sharp contraction, as in most of Armenia's capital-intensive export industries, the decline in the export of machinery and chemicals took a more gradual path during the 1994-2006 period (Table 3). Not unlike other capital-intensive goods, the most part of these goods were

[29] The 1996 GDP equaled 40% of the 1990 GDP; growing steadily, it attained the 1990 level again only by 2004.

exported to Russia, where the Armenian manufacturers had retained business contacts from the Soviet times and found it easier to communicate owing to cultural similarities and knowledge of the Russian language. These sectors apparently had an opportunity to stay in their respective markets, but gradually lost market share and missed expansion opportunities when they proved unable to improve their quality, upgrade production assets and processes, reduce costs and adopt effective cost and quality management tactics, as well as customer-oriented export marketing techniques in order to retain export competitiveness. The machine building sector failed to tap into the availability of the local raw material (ferrous metals) base.

Table 3: Armenia: 1994-2006 Merchandise Export Composition, in percentages

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Mineral products	8.3	10.6	6.4	7.6	13.9	13.4	12.4	11.1	8.4	7.4	13.8	9.6	13.9
Chemicals	5.5	9.4	5	5.9	4.7	4.6	4	5.3	2.4	1.6	2.1	1.1	3.5
Light Industry	15.1	8.1	5.1	5.6	7	6.5	5.2	7	5.1	4	5.8	3.9	3.9
Food	6.3	5.1	4.3	12.2	8.2	7.6	9.8	14.5	11.6	11.9	11.4	11.8	12.1
Precious stones and metals	34.9	33.1	48.3	23.7	24.1	43.1	40.4	35.9	51.6	51.2	41.4	34.5	30
Base metals, copper, aluminum and articles thereof	4.4	11.3	16.4	24.8	18.2	10.8	14.7	12.8	8.9	13.1	19	33	28.4
Machine building and tools	16.2	14.4	13.3	16.3	21.6	9.1	11.4	10.3	7.7	5.5	4.9	4.1	3.9
Miscellaneous industrial goods	2.5	1.2	0.1	0.8	0	0	0.1	0.1	0.2	0.1	0.1	0	0
Other	6.8	6.8	1.1	3.1	2.3	4.9	2	3	4.1	5.2	1.5	2	4.3

***Source**: National Statistical Service*

Light industry's share in the national exports also decreased gradually as high transportation costs, extreme dependence on imported raw material supplies and capital redundancy made Armenia an unattractive destination for light industry subcontracting, wherein national firms failed to develop and promote unique product lines. For example, leather and shoe manufacturing just disappeared from the country's export portfolio, although this merchandise was particularly popular with Soviet consumers.

Labor-intensive cut and polished diamonds emerged as the dominant export category since 1994. In fact, diamonds are exported under the processing and re-exportation customs regime and are not subject to value added tax; only about 17%[30] of the value of the cut diamonds constitutes "real" exports or, more precisely, wages paid to labor. Resource-intensive non-ferrous metals and mineral products were the other two large export categories for the entire period. Processed food was the forth important export category; however, food exports generally consisted of beverage exports to CIS countries, where the Armenian beverages and, particularly, the brandy have been very popular since the Soviet period.

Checking for the Presence of *Sunk Costs* of Market Entry/Exit

Natural minimization of entry/production/distribution costs make the presence of *sunk costs* in major industrial export categories – including jewelry, metals, food and beverages – largely non-apparent. In most instances, entry into a foreign market by an Armenian firm did not involve a

[30] Trade Diagnostic Study, World Bank 2001.

direct market engagement and a new market learning process that form the components of *sunk costs*. In terms of exported goods, in about 80% of cases, exports from Armenia consist of intermediate inputs (precious stones, raw metals and ores) which do not require use of sophisticated market entry and product distribution strategies (Table 3). This is in line with the modeling results that we present in the second part of this paper. That is, an Armenian firm minimizes *sunk costs* of foreign market entry, first, by cutting back on investments into a number of constituent components to those and, second, by minimizing investments into the other remaining components. In terms of information on foreign markets and distribution channels in adjacent economic activities, selling abroad featured a wholesale trade mediated by a third-party from the Diaspora. The latter factor cannot be underestimated in our era of information technologies' dominance in communication. Its comprehension allows understanding and coping with foreign market entry conditions and costs, avoiding high unjustified production and financial management costs and thus lowering risks and enhancing foreign market participation.

Thus, the diamond sector was spearheaded by one Diaspora connection back in 1994.[31] Although the business grew in subsequent years and attracted interest from a variety of other players from Belgium, Russia, Switzerland and Israel, it has largely evolved as a wholesale trade in intermediary inputs. The mining sector is the second largest contributor to national exports. Remarkably, trade in resources, including trade in intermediate diamond inputs, qualifies as a wholesale trade in perfectly substitutable commodities which have high degrees of price and exchange-rate elasticity. This trade depends on the extraction capacities and long-run profitability of investment rather than the ability to enter export markets directly. The textile business depends entirely on the Diaspora for subcontracting, raw material supplies and subsequent exporting.[32] Sales of beverages and processed food extend to the Russian, US and EU markets and, with a few exceptions, are organized on a wholesale basis through Diaspora networks or accidental contacts thereof.

A number of common threats affect sustainability of these developments. For example, an exogenous macro shock may cause the Diaspora-associated exporters to incur negative profits on the imports of intermediate or manufactured labor-intensive goods (e.g. diamonds and textile); or their motivation to be linked with the Motherland via support of domestic groups may fade away; or the small groups of expatriate consumers of Armenian goods may develop a different taste for products and discontinue buying from Armenian producers. In this sense, cost minimization via Diaspora coordination gives Armenian businesses a good start that should be used as a basis for further diversification of business connections.

The booming export of resources from Armenia is conditioned by the growing demand for (natural) resources in international markets. In our view, as MNCs become more aggressive, not only they search for, but also they attempt to create economic rent, e.g. to introduce oil-patch exploitation schemes to ultimately all economic sectors via the creation of new, mostly artificial, markets. Besides becoming (partial) owners and/or consumers of (natural) resources worldwide, they work towards, particularly, arranging negligible labor costs and attaining economies of scale in their production. Diseconomies of scale virtually disappear via globalization, and a classical example of too many people tilling a field is not topical today, as the globalized field's size is adjustable to the harvester's needs. In that, an Armenian firm tries to reduce costs, i.e. acts as *market-taker*, not

[31] Manuk Hergnyan, Anna Makaryan, *The Role of the Diaspora in Generating Foreign Direct Investment in Armenia*, CRRC Working Papers, 2006.
[32] Ibid.

market-maker. This difference comes not only from incomparable scopes of operations and financial, managerial and organizational capacities, but also from initial discrepancy in the goals: while an MNC's priorities are profit and power, an Armenian firm aims at profit as an intermediate result that allows continuing a firm's building and crafting activities.

Exchange Rate as Part of *Sunk Costs* of Market Entry/Exit

Boosted by a healthy pace of economic growth, which has been associated with the growth in the non-tradable lagged-effect construction sector and heavy inflows of remittances from Russia and other countries, as well as largely in response to the Central Bank's policy of de-dollarization and inflation targeting (since 2006), the Dram has been steadily appreciating since 2003. The appreciation contributes to uncertainty in timing and costs of business activities, and has been negatively perceived by Armenian firms as harming their competitiveness domestically and globally.[33] Notably, the industrial growth rate has been moderate since 2003 and a negative -1.1% in 2006 (Table 2), pointing to a receding competitiveness of domestic manufacturers. The level and composition of industrial exports have not significantly changed following the appreciation of the Dram. In particular, there have been few foreign-market entries since the point when the national currency started to appreciate: the *sunk costs* were higher. The industrial exports in 2004 and 2005 were slightly more than 20% of GDP and about 25% of GDP in 2003.[34]

For firms already exporting, however, there is little evidence that the Dram appreciation has had a dramatic effect on their export performance or has encouraged them to leave their export markets; this behavior complies with the first part of the hypothesis stated in our *Introduction*: *sunk costs* are significant while persistence is presumably strong. This view is supported by Colacelli's (2006) finding that export is inelastic relevant to exchange rates with elasticity higher for developed countries and lower for developing countries.

The export composition and concentration on a few commodities remained almost unchanged. Although the share of the diamond exports steadily decreased from 51.2% in 2003 to 30% in 2006, the share of base metals rose from 13.1% in 2003 to 33% in 2005 and 28.4% in 2006, and the share of the food and beverages exports remained almost the same (Table 3). Nearly 50% of the export growth rate in 2002 and about 35.7% and 34.7%, respectively, in 2003 and 2005 accounted for the large-scale investment and resumption of metal and mineral resource exports. The growth has been reasonable at 5.4% in 2004 and 3.1% in 2006. It must be noted that in the background to the growing *sunk costs* of market entry/exit caused by the steady appreciation of the Dram, Diaspora groups have acted as a proxy for the export stability and have supported performance of a number of export sectors (not including mining), especially labor-intensive ones, e.g. diamonds, foods, beverages and textiles.

EMPIRICAL ANALYSIS OF THE EXPORT STATUS OF AN ARMENIAN FIRM

Empirical research so far performed reflected results of modeling on panel datasets. While we apply cross-sectional modeling in this paper, we rely on hints received from a more extensive platform. In checking the validity of firm-specific factors for exporting, we pay primary attention to those highlighted in empirical literature.

[33] *Business Climate, Productivity, and Competitiveness in Armenia: 2002-2005*, Giuseppe Iarossi, Federica Saliola, Giovanni Tanzillo.
[34] National Statistical Service.

Selected literature review

Previously performed empirical research on the *sunk costs* of market entry identifies causality between firm-specific factors and firm export participation *ceteris paribus* factors a firm has no control over. These empirics rely on the theory of "hysteresis of trade" developed by Baldwin and Krugman (1989), according to which firms that are already exporters will persist in their exporter status under less favorable macroeconomic conditions because of the *sunk costs* of market entry they have already incurred in relation to a foreign market entry. In the same vein, Dixit (1989a) has found that *sunk costs* combined with market uncertainty create – for the firms that incurred those costs – an option value of waiting. Among firm-specific factors, each plant's geographic location, industry, age, ownership structure, capital stocks, investment flows, expenditure on labor and materials, value-added products, value of output sold in the domestic market, and value of output exported are listed. In order to analyze the export decision of a firm, most of the authors apply discrete response models to panel data on a sample of surveyed firms in a country.

A major finding is that past participation in the export market will have a significant effect on the probability of exporting in the current period. Roberts and Tybout (1995) also conclude that re-entry costs of plants that have been out of the export market for a year are substantially less than the costs of a first-time exporter. But in the case of an absence of two or more years, re-entry costs are not significantly different from those faced by a new exporter. Further, plants that are large, old and owned by corporations are all more likely to export. Aitken, Hanson and Harrison (1997) find that foreign participation has positive influence on exporting probability. They also conclude that, to the extent that foreign investors directly or indirectly provide information and distribution services, their activities enhance the export prospects of local firms. Bernard and Jensen (2001) find that highly productive plants are more likely to enter foreign markets. Lawless (2005) introduces a measure of sector tradability to separate the effect of sectoral trade openness from the effect of the *sunk costs* and finds that firms in more easily traded sectors are most likely to be exporters.

In general, empirical literature highlights the similarity between export market entry/exit *sunk costs* and new product development and distribution costs and fixed costs of production. In line with this, Colacelli (2006) finds that export volumes are generally inelastic in relationship to exchange rates and that this elasticity is higher for developed countries and lower for developing ones; that is, a developing country's entrepreneurs' export persistence is higher.

BEEPS Data

The Business Environment and Enterprise Performance Survey (BEEPS) was initiated by EBRD and WB Group in 1999 and continued in 2002 and 2005. In 1999, the survey was administered to approximately 4,000 enterprises in 26 countries with transition economies; in 2002 to about 6,500 enterprises in 27 countries; and in 2005 to about 9,500 companies in 28 countries. The 2005 survey also incorporated an additional sampling overlay of the manufacturing sector for 7 countries included in the survey. Armenia was included in each round of the survey and in the manufacturing overlay of 2005. The collected data refer to 1998, 2001 and 2004, respectively.

BEEPS for 2001 and 2004: The main sample includes 171 observations for 2001 and 201 observations for 2004. In the sample design, the sectoral composition consists of industry and services and is defined by the structure of GDP. In both years, the industrial part of the sample includes mining and quarrying, construction and processing industries in the manufacturing part;

and transportation, storage and communications, wholesale, retail, repairs, real estate, business services, hotels and restaurants, other community, social and personal activities in the services part. Firms operating in sectors with government price regulation and prudential supervision (e.g. banking, electric power, rail transport, water and waste water) are excluded from the sample.

Other sampling considerations: (i) a minimum of one-tenth of the sample is in the small-size (less than 50 employees) and another tenth in the large-size (250 and more employees) categories, while firms with only one employee or more than 10,000 employees are excluded; (ii) the same lower bound is defined for ownership: one-tenth of the firms are under foreign control, i.e. with foreign shares of 50% or more; (iii) no less than 10 of each 100 firms are exporters, i.e. export a minimum of one-fifth of their total sales; (iv) at least a tenth of the firms are in the category "small city/countryside," which are localities of less than 50,000 inhabitants; and (v) enterprises that started to operate after 2000 are excluded from the 2002 survey and those started between 2002 and 2004 are excluded from the 2005 survey.

BEEPS for 2004 only: The manufacturing overlay sample (150 observations) was to be distributed between at least two major industrial regions within each country; in the case of Armenia, the country is considered as a whole. This additional sample is collected from manufacturing enterprises only, keeping the sectoral composition as similar as possible across countries, and aims at even distribution between manufacturing sectors. Armenian companies included in the manufacturing overlay sample export meat, milled grain and other food products, beverages, structural and fabricated metal products, wearable apparel and accessories, and general mechanical engineering products[35]. Although the distributional criteria of the main sample – in terms of ownership, size, exports, etc. – do not apply to the manufacturing overlay survey, the manufacturing overlay observations are largely compatible with the main sample data. When combined, these provide a new, enriched sample though with different sectoral composition.

Modeling with BEEPS Data

As we stated in the *Introduction*, an insufficient data stock makes us recede from applying a dynamic discrete response model to panel data and we further rely on cross-sectional discrete response modeling in our search for **valid factors/decisive characteristics for a firm's decision to export**. Namely, we apply a probit model to the 2001 and 2004 data with a firm's exporting status as the binomial response variable, and a set of non-lagged percentage and dummy variables for firm-specific factors as controls. To construct dummies, we used survey responses with at least 10% incidence of success or failure. For 2004 analysis, we include the manufacturing overlay into the sample. STATA output is summarized in Table 4.

Specifications found relevant within the scope of the research support the conclusion based on the literature review: an Armenian firm minimizes expenses of entry/exit into a foreign market by avoiding certain components of *sunk costs* of selling abroad; that is, a firm sells goods of intermediate and not final consumption. Export of intermediate products requires relatively less effort and expense for market entry than export of final consumption goods. Particularly, according to the NSS data, the country's exports by 80% consisted of manufactured commodities for the period between 1999 and 2006. Metallurgy made 59% of the total merchandise exports, food processing - 19%, chemical industry - 6%, other mineral products - 5%, furniture - 4 %, textiles - 1% and others - less than 1% in 2006. Firms working in these sectors were included in the survey;

[35] See appendix B of " A brief report on observations, experiences and methodology from the survey" for BEEPS 2005.

and a firm being engaged in the manufacturing sector showed a large increase in the predicted exporting probability of that firm (Table 4). To check if the result is due to the inclusion of the manufacturing overlay, we applied a number of probit specifications to the main sample only. The result is essentially the same: manufacturing activities raise the probability of exporting by almost 20% to 30% in different specifications; in each, the dummy is statistically significant at 0.01.

Table 4. Probit results of firm-specific factors on exporting for 2004 data (2005 survey)

Exporter (dummy)	Change in Probability (Robust Standard Error)		
	Model 1	Model 2	Model 3
Manufacturer (dummy)	.1959	.3304	
	(.0510)*	(.0494)*	
Small firm (dummy)	-.1707	-.2662	
	(.0449)*	(.0456)*	
Staff with higher education (%)	.1435	.1699	
	(.0523)*	(.0759)**	
Wages share in sales (%)	-.1123	-.1535	
	(.0601)**	(.0795)**	
Bank borrowings for working capital (%)	.0991	.1596	.1489
	(.0403)**	(.0614)*	(.0565)**
Share held by an individual (%)	-.0518	-.1077	-.1082
	(.0292)***	(.0440)*	(.0426)**
Lobbying activities (dummy)		.0944	.1011
		(.0398)**	(.0457)**
Domestic competition (dummy)	.1040		.2311
	(.0365)*		(.0407)*
Number of inspections (dummy)	-.0503		-.0727
	(.0244)**		(.0374)***
Competition in foreign markets (dummy)	-.0486		
	(.0276)***		
Input importer (dummy)	.1312		
	(.0369)*		
Profit reinvestment (%)	-.0746		
	(.0389)***		
Reliance on the law (dummy)	.0509		
	(.0310)***		
Share of new equipment cost in sales (%)		.0064	
		(.0020)*	
Share of imported input in total (%)			.1677
			(.0490)*
Medium firm (dummy)			.1552
			(.0520)*
Constant	-.1993	-.1991	-.3561
	(.0638)*	(.0714)**	(.0474)*
Number of observations in a model	350	335	250
Pseudo R-squared	0.4947	0.3885	0.3201

*Significant at 0.01, **Significant at 0.05, ***Significant at 0.1

As for other firm-specific characteristics, none of the firm age dummies with ‘old firm’ defined as pre-1988 (earthquake), pre-1991 (the Union collapse and war) or pre-1993 (bottom of economic recession), or as performing its activities for at least five years was statistically significant. This may be explained by depth and sharpness of structural changes still in effect, when the older age of a firm does not necessarily mean its capability to expand sales abroad.

Also, contrary to expectations, the dummy for the ‘state participation in a firm’s capital’ was not significant for 2004, while foreign participation showed too little incidences of success to be

included in the analysis. Instead, shares held by an individual is significant; it lowers probability of exporting by 5% to 11% in different specifications. Together with the small size of a firm, this lowers the exporting probability by about 17% to 27%, which supports the view that large companies with more than one shareholder are most probable to export. Notably, probability of exporting by a medium-sized firm increases by around 16%. We attribute these changes in the probability to the importance of corporate governance issues in the decision-making process, assuming little flexibility of firms which are owned by individuals.

Diversifying a firm's risks by distributing them to financial institutions raises its chances to be an exporter; this is demonstrated by a 10% to 16% positive change in the exporting probability due to bank loans to supplement a firm's working capital.

Interestingly, profit reinvestment lowers by about 7% the probability of a firm being an exporter. We assume that the negative sign of the effect is attributable to non-lagged right-hand side variables and that with a one-period lag, this estimate would be positive though not necessarily large. We apply the same assumption to the effect of new equipment installation and find that this raises the probability of exporting by less than 1% in these non-lagged models, but is strongly statistically significant; thus we presume that in a lagged model, it would demonstrate a larger effect.

Further, a firm that survives domestic competition is 10% to 23% more likely to expand and sell abroad; and risk of competing participation in foreign markets lowers the probability of exporting by 5%. Meantime, importing a part of inputs makes a firm about 13% to 17% more likely to export. We can attribute this fact both to the small size of the Armenian market and the dependence of certain manufacturing sectors (such as diamonds and textiles) on imported raw inputs. To infer whether this change in probability may be attributed to the spillover effect – which implies use of information on foreign markets and distribution channels in adjacent economic activities – panel data analysis will be needed.

As is evident from many countries' experiences, an inexpensive and qualified workforce is crucial for economic expansion. According to 2004 data, this is true also for Armenia: higher education of the staff raises the probability of exporting by about 14% to 17%, while a larger share of wages in sales lowers that probability by about 11% to 15%.

Dummy variable for the 'number of inspections in a year' was constructed in a number of forms. Constructed as a 'success' for a reasonable number of inspections (e.g. once a year by each relevant authority) and 'failure' for an excessive number, the variable was significant with a predicted positive change in the exporting probability of 5% to 7%. Constructed as a 'success' for one or no inspection in a year, the dummy was not statistically significant, but showed a positive sign and change in the exporting probability by about 3%. In combination with the 'reliance on the law' indicator, this increases the probability of exporting by 5% (Model 1). Lobbying a firm's interests at both national and local levels increases the exporting probability by about 9% to 10% (Model 2 and 3). However, this combination gives rise to corruption concerns.

Analysis of the 2001 data adds to the discussion above that, *ceteris paribus*, for a firm with foreign participation in its capital, likelihood of exporting is about 17% more, while for a firm that is a member of a business association, this is about 18% more. A firm that introduced a new product is by 13% more likely to be an exporter. Other variables constructed as for 2004 data preserved their signs and were statistically significant (Table 5).

Table 5. Probit results of firm-specific factors on exporting for 2001 data (2002 survey)

Exporter (dummy)	Change in Probability (Robust Standard Error)
Foreign ownership (dummy)	.1697
	(.0685)*
Largest share in capital (%)	-.1674
	(.0803)**
Input importer (dummy)	.1650
	(.0472)*
Competition in foreign markets (dummy)	-.1520
	(.0481)*
Member in a business association (dummy)	.1802
	(.0522)*
New product introduction (dummy)	.1298
	(.0523)*
Market share greater than 5 % (dummy)	.1435
	(.0457)*
Constant	-.2456
	(.0830)*
Number of observations	89
Pseudo R-squared	0.5022

*Significant at 0.01, **Significant at 0.05, ***Significant at 0.1

The fact that the BEEPS survey does not include data on the Diaspora's input in a firm's export promotion does not allow us to quantitatively infer on this input's significance to an Armenian firm's export participation/export base expansion. Iarossi et al. (2005) provide productivity discussion on firm level in Armenia along with inter-country comparisons in a number of specifications. The WB FIAS Assessment (2004) provides details on administrative and legislative changes before 2004.

Analysis of the NSS data

The National Statistical Service provided aggregate company data by economic activity types, including production and sales volumes, productivity, exchange rates and a number of financial indicators. These indicators came in a number of datasets that showed low compatibility; sometimes we encountered methodological gaps within the NSS routine. Particularly, financial data are collected from a specifically designed sample of enterprises while industrial data collection does not follow a certain sample design; both contain incidental gaps. We compiled a panel (longitudinal) dataset for 2000-2007 and attempted to model the volume of exports depending on volume of production, exchange rate fluctuations, average industry productivity, average number of industrial workers, and share of domestic sales in the total. Monetary values of export and production volumes were calculated relative to the value of 2000.

Although we did not reach a finite model, statistically significant variables behaved as expected and showed presumed signs and magnitudes. For instance, output volume is of a large magnitude and positive effect. A commonsense explanation for this is that the Armenian market is small, thus, large output volumes imply a higher probability of selling abroad. The average number of industrial workers is another statistically significant variable; it shows a small positive effect on the volume of export that we trivially interpret as linked to the volume of production.

Further, exchange rate appreciation has a negative effect on the exports; however, magnitude of the effect is small. We provide the following reasoning to explain this fact: (i) The exchange rate

appreciation, unless too big to be sustainable, will not significantly affect the export behavior of the firms in the short run as the firms will hold to the inertia of selling the same products to the same clients abroad. However, in the long run, the effect may be significant as the behaviors of both suppliers and buyers will change. (ii) Although Armenia's dependence on the export of intermediate commodities highlights the vulnerability of the country's exports to the exchange rate fluctuations, the recent rise of raw metal prices on international markets have significantly benefited the country. In the case of Armenia, the link between the *sunk costs* of market entry and exchange rate fluctuations is vague, so it would be unjustified to attribute the persistence in the export behavior to the existence of *sunk costs* in the cost accounting of the domestic exporters. Rather, as discussed in the earlier sections of this paper, this may be the result of the higher supportive role of the Diaspora-based importers.

CONCLUSION

We relied on a combination methodology to check if a number of firm-specific factors are decisive in the export decision-making and subsequent export behavior of an Armenian firm. In that, we used the notion of *sunk costs* for market entry/exit, i.e. one-time fixed costs which firms have to incur to sell abroad. To present the context of an Armenian firm's economic activity and attain a higher reliability of factor interpretation in the empirical models, we first analyzed Armenia's export dynamics before and following independence, the subsequent changes in the macroeconomic situation, emergence of new economy-wide and firm-specific costs and factors. We then moved to building cross-sectional discrete response models for the BEEPS datasets jointly compiled by EBRD and WB in 1999, 2002 and 2005. As well, we attempted to model on aggregate company data compiled by the National Statistical Service of Armenia.

Through a careful literature review, we showed the persistent inability of the old-era enterprise bosses to adapt production processes to new market conditions. Besides, we pointed out an insufficient level of investment (including FDI) and 'know-how' flows in the previously export-oriented sectors, as well as the inherent burden of new costs, including tax, customs, transportation, exchange rates, finances and independent market entry costs (*sunk costs*). As a result, the export portfolio of Armenia underwent major changes, with cut diamonds and mining products coming up to replace textiles, machinery and chemicals as main export commodities. Linking this piece of analysis to the empirical models employed in this paper, we find that the age of an Armenian firm is a poor factor explaining its export behavior; foreign ownership has a positive effect; and the difficulty in changing the management culture and perceptions, as well as concentrated, unsophisticated ownership structures and a lack of corporate government tradition remain negative factors. We further identified that the majority of exporting firms (except for the large mining firms) relied on the Diaspora-based wholesale networks and mediation in organizing exporting activities. Moreover, we find that the dramatic appreciation of the national currency in the recent years has disclosed a willingness by the Diaspora-based groups to incur larger costs, leading to the creation of the "*sunk cost* effect" of persistent export behavior.

Further, the empirical tests have confirmed the findings based on the literature review that the structure of the *sunk costs* in Armenian exports are generally confined to the components necessary to sell an intermediate product abroad. *Ceteris paribus*, the probability of a firm being a manufacturer in the model raises the exporting probability significantly, whereas 80% of the

manufacturing exports from Armenia consist of intermediate commodities which do not require sophisticated, direct market entry strategies. Most of these and other exporters, according to the model, are medium-to large-size companies, able to lobby their business interests through group-based business associations or individually, in which case they might seek 'to buy' sponsorship from the government to secure (i) access to finance, (ii) a competitive position and (iii) protection under the law, domestically. All three factors are positive and statistically significant in the model. Both the ability to withstand domestic competition and to rely on the rule of law have a positive effect on the exporting probability of the firms, whereby the competition met on the foreign markets lowers the probability of exporting.

Development policies would require significant upgrading of the firm management culture, cutting of production costs and introducing innovative products (according to the models, innovative firms are more likely to become exporters), yet also a government commitment to consistently reduce the administrative cost burden on the national firms and to ensure their access to low-cost financing. In the medium term, policies that further minimize the *sunk costs* through the Diaspora channel and Government-sponsored spillover effects may prove crucial for further business connections and, thus, export expansion. However, in our view, with today's priority to expand the export base and accounting for unfavorable exchange rate behavior, diversification of approaches to lower the burden of various components to *sunk costs* should be on agenda.

Therefore, as a recommendation for further research necessity of modeling on panel data is evident to quantitatively characterize behavior of lagged-effect variables such as profit reinvestment and new equipment installation. Besides, a firm's age may prove significant and factors valid for persistence of firm export participation may be explored.

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ANNEX 1.

PRE-TRANSITION ECONOMIC COORDINATION IN BRIEF

Trade as a channel of income redistribution in FSU

As stated above, the Soviet Union traded little with the outside world. For reasons discussed extensively in the subsequent sections, the Soviets exchanged hard resources (refined petroleum, and ferrous and non-ferrous metals) with the external world for soft manufactured products. Trade inside the country, however, represented a quasi-flow of goods, particularly because, apart from being a means for exchange of different commodities, it also served as an implicit subsidization tool aimed at attaining income redistribution among the republics unequally endowed with natural, human and capital resources. This redistribution came at the expense of underpriced imports of natural resources (oil and gas) and overpriced exports of manufactured goods. Services were largely ignored in the FSU trade and played little part in the trade-driven income transfer mechanism.

Trade had welfare implications which 'benefitted' the Soviet manufacturers

Subsidization of inter-republican trade entailed serious welfare costs for the Soviet consumers as the net effect on the republics – of positive and negative trade transfers – was a -17%[1]. This cost may also be interpreted as the total amount of extra surplus incurred by the Soviet manufacturers owing to the cheap (i) resource and (ii) transportation supplies, as well as (iii) exaggerated fixed pricing applied to the manufactured goods. The estimates suggest that the price of oil and gas in the Soviet Union was 2.7 times below the world price, whereas these resources accounted for 61.5% of the underpriced Soviet exports.[2]

Other major categories of underpriced exports at the FSU level included machine building, and ferrous and non-ferrous metals. The major overpriced import categories included light industry and food processing, which together accounted for 76% of the overpriced inter-republican imports.[3] Ferrous and non-ferrous metals cumulatively accounted for 17.3% of underpriced exports.[4]

Armenia's export was heavily overpriced, although Armenia paid back the surplus through higher tax contributions

Armenia exported a mix of overpriced and underpriced goods. In 1990, Armenia's net overpriced exports of non-oil and gas commodities made 1.4 billion current rubles compared with the 910 million rubles' worth of overpriced imports of non-oil and gas and 350 million rubles' worth of underpriced imports of oil and gas. This pattern of trade flows secured Armenia a position as a net recipient of trade transfers worth 879 million rubles.[5]

Estimates suggest that Armenia exported to its sister republics light industry goods at prices exceeding world prices almost three-fold.[6] The machine building – the second largest export category – traded at prices close to world prices, although the FSU average for machine building exceeded the world prices by 1.2 times. Food industry was heavily overpriced – almost 6 times more expensive than in the world – although unprocessed food was only 3

[1] Orlowski (1993).
[2] Ibid.
[3] Based on Orlowski (1993).
[4] Ibid.
[5] Ibid.
[6] Ibid.

times more expensive. The FSU average for non-processed food was close to world prices. Chemicals were likewise overpriced, trading at prices exceeding the world price 1.16 times. The world prices for ferrous and non-ferrous metals exceeded the domestic price by 1.21 and 1.61 times, respectively. [7]

While this pattern of trade discloses the systemic bias specific to the FSU trade and portrays Armenia as a net receiver of trade transfers, it is true that Armenia also paid back this surplus to the central budget through higher tax contributions. [8]

Soviet Model of Industrial Organization

Macro Perspective

The Soviets favored large industrial plants, piecemeal production processes, extreme industrial concentration and politicized investment aimed at bringing industrialization to the remotest corners of the vast empire.

The Soviets built to impress

From its onset, the Soviet Union emphasized the need for rapid industrialization and promoted construction of huge industrial agglomerates with little consideration of the cost effectiveness and long-term economic viability of such undertakings. Small and medium undertakings were largely discouraged and virtually nonexistent.

FSU was a huge conveyer belt economy

The Soviet industrial complex resembled a huge country-wide conveyer belt, where parts and components released by one group of factories were shipped elsewhere for the final assembly. As in the globalized production chains, few of the Soviet factories specialized in complete production processes. Rather, they produced separate parts and components which were further processed and assembled elsewhere in the country. Unlike the globalized production chains though, the Soviet enterprises were limited in their choice of material supply sources under the closed economy system.

Most of Armenia's manufactured output consisted of intermediate goods shipped to other parts of the FSU. Although Armenia manufactured some goods for final consumption, it was still largely dependent on raw material supplies from other parts of the FSU to manufacture, for example, clothing and machine tools.

Severe interdependency disabled shock resiliency in the Soviet firms

The production process in the FSU was extremely concentrated as very few firms produced a particular part or component which was used by the entire country. For example, 34 of 65 components used in the assembly of agricultural equipment were produced by one firm.[9] This type of integration, combined with the limited ability of the firms to outsource resources and other material supplies used in the production process, resulted in their substantial and persistent interdependency status. Apparently, that is why the Soviet firms demonstrated little resiliency to the political and economic shocks of the late 80s and early 90s. A failure of one

[7] Ibid.
[8] Avanesyan and Freinkman, 2003.
[9] Based on Linn, 2004.

enterprise to supply a particular part threatened to paralyze the operation of a host of factories which depended on that component to perform their own production cycles.

Investment projects targeted equal participation in the production process

Investment projects in the FSU were not measured against the economic feasibility criteria, including the available resource base, production and shipping costs and expected profitability. The main purpose of such projects was to bring industrialization to the farthest parts of the FSU and make the citizenry in those areas equal participants of the Socialist production process. Sustainability of such investment projects in the USSR was achieved through subsidized imports of energy resources and other raw materials, as well as virtual neglect of transport costs.

Micro Perspective

The system of central planning provided few incentives to the Soviet factories and plants to develop competitiveness and export management skills. Firms were successfully protected from economic competition and the influences of market forces through a rigid mode of production and consumption planning, exaggerated fixed pricing of goods, distorted cost management practices, as well as isolation from world markets.

Firms knew in advance what, how much and for whom to produce

Under the command economy, answers to the basic microeconomic questions *"what to produce," "how much to produce,"* and *"for whom to produce"* were given behind the closed doors of *Gosplan*, which relieved the enterprises of what would otherwise be their normal duty of finding markets for their products, studying consumer behavior and preferences in a particular market, improving product quality, adding elements of innovation and handling domestic and export marketing activities. The producers of goods were ignorant of the preferences and quality requirements of their potential consumers. The goods they produced were of intermediate, but too often substandard, quality.

A handful of high-profile firms manufacturing goods for the foreign marketplace were uninformed of their export partners and markets as their export marketing was centrally handled by all-Union specialized agencies. For example, a press plant in Gyumri, which exported to 53 countries outside *Comecon*, lost its export opportunities all at once following the collapse of the USSR.[10]

Subsidies helped keep production costs low

While the prices of final goods remained fixed, the costs incurred by the Soviet firms were kept artificially low in order to create an illusion of "profitability" by domestic firms.

The excessive scale of industrial plants was not justified economically, reflected the preferences of the political elite and claimed wasteful use of infrastructural resources, including air and rail transportation which both were implicit subsidies by the Soviet government. At the same time, firms enjoyed implicit grants through trade in cheap resources and direct explicit allocations from the central government. This explains why and how the Central Asian producers were quite comfortable with shipping their commodities, for example, from the Baltic ports.[11]

[10] Decaye, Jocelyne et al, 2000.
[11] Linn, 2004.

Tax burden added no prudential element to the cost management of the firms as the Soviet industrial bosses, including managers and ministers, received bonus entitlements for producing beyond the earmarked plan. For the same reason, they often tended to exaggerate the volumes of the output they produced.[12]

Closed-border trade was the protectionist umbrella of the Soviet firms

The closed borders were the fundamental framework that kept the command economy of the Soviet Union going. The Soviet Union was a common currency area so under conditions of closed borders and a common politico-economic space, the Soviet firms did not incur transaction costs associated with exchange rate fluctuations and customs clearances.

Closed-border trade was the umbrella that protected the Soviet firms from price, market and product competition. Only behind the shield of closed borders and a virtual absence of trade-associated transaction costs could the Soviets successfully employ the model of price, cost and output fixing.

[12] Aslund, 2001.

ANNEX 2.

FDI COMPOSITION (percentages)

Type of Activity	1999	2000	2001	2002	2003	2004	2005	2006
Agriculture	0.0	0.0	0.3	2.4	0.0	0.0	0.0	0.0
Metal ore mining	1.5	2.6	0.9	2.2	7.9	1.5	0.4	7.1
Other mining	6.5	0.2	0.1	0.2	0.0	17.4	39.9	19.2
Food and beverages	28.9	6.5	5.1	9.6	8.4	15.3	10.8	4.6
Tobacco	1.5	1.2	0.0	4.2	0.6	0.0	0.0	0.0
Textile	0.03	0.1	0.05	0.0	0.0	0.01	0.0	0.0
Leather	0.0	0.03	0.0	0.0	0.0	0.0	0.0	0.0
Chemistry	0.2	0.2	0.9	7.7	0.2	0.05	0.6	0.1
Rubber and plastic goods	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.6
Other manufacturing from non-metal ore	1.0	0.0	0.0	0.0	0.0	0.5	0.3	0.0
Metal industry	0.4	0.3	2.8	2.2	4.1	0.0	0.2	0.0
Manufactured goods of metal	0.0	0.0	0.0	0.14	0.0	0.0	0.0	0.0
Machine building	0.2	0.005	0.0	0.06	0.0	0.0	0.1	0.02
Manufacturing of office equipment and computers	0.0	0.0	0.0	0.0	0.01	0.01	0.0	0.0
Manufacturing of electric machines and equipment	0.0	0.0	0.0	0.0	0.0	0.02	0.1	0.0
Production of electric, radio, TV appliances	0.0	0.0	0.0	1.8	3.9	0.03	2.2	1.0
Manufacturing of medical, optical appliances and watches	0.0	0.0	1.2	0.4	37.2	0.0	0.0	0.0
Furniture	0.1	0.9	2.7	2.6	0.8	1.6	2.2	0.9
Electricity, gas, vapor, hot water	32.3	35.0	32.8	30.1	2.5	14.2	0.05	7.2
Construction	0.9	0.6	4.5	6.1	3.4	0.5	1.8	2.6
trade and technical maintenance of vehicles, motorcycles	1.5	0.2	0.01	0.0	0.0	0.0	0.0	0.0
Wholesale trade, except trade in vehicles	7.9	9.0	5.2	5.1	4.2	2.0	1.1	4.0
Retail trade	0.05	0.1	0.6	0.2	0.2	0.1	0.1	0.1
Hotels and restaurants	5.2	3.8	1.5	1.5	0.9	1.4	2.7	0.1
Land transport	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Air transport	0.0	0.0	0.0	0.0	2.4	10.8	6.1	10.6
Communication	8.9	31.2	17.6	6.6	6.6	19	22.9	24.7
Financial intermediation	0.0	0.0	2.2	6.7	2.3	5.3	0.0	0.01
Insurance	0.1	0.0	0.4	0.05	0.0	0.04	0.2	0.2
Other activities in the field of financial intermediation and insurance	0.004	0.0	1.3	0.05	0.0	0.0	0.0	0.0
Software	0.5	1.2	2.9	3.7	5.1	2.2	2.8	2.8
R&D	0.2	0.0	6.0	1.0	1.0	0.9	2.0	0.4
Other consumer oriented services	0.6	2.5	2.1	1.8	1.2	0.9	1.1	3.4
Education	0.6	0.9	1.3	0.7	0.4	0.0	0.0	0.0
Sports, Culture, Entertainment	0.9	0.8	0.003	0.5	0.05	0.3	0.3	0.0
Other	0.0	2.7	7.5	4.8	5.83	5.94	2.05	10.37