Diagnostics in Transition*

Analyzing the constraints to economic growth in Moldova

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January 2010

Comments welcome

[*] We thank Algerlynn Gill and Elizabeth Schultz for excellent research assistance. This work also builds on the Constraints Analysis conducted by Valentin Bozu, Dumitru Caragia, and Iurie Gotisan with the support of Alex Culiuc. The views represented herein are our own and do not represent those of the Millennium Challenge Corporation nor of any other organization.

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Abstract

The "Growth Diagnostics" methodology laid out in Hausmann, Rodrik and Velasco (2005) provides an approach for policymakers to identify the most binding constraints to economic growth. This paper examines the use of this methodology by policymakers in Moldova in the context of the country's engagement with the Millennium Challenge Corporation, a US government agency providing foreign assistance aimed at promoting economic growth. This is the first donor engagement with a developing country of which we are aware in which a country-led growth diagnostic exercise directly informed the development of a donor aid package. Our paper identifies features of the process that shaped the usefulness of the analysis. We then revisit the analysis conducted by Bozu, Caragia and Gotisan (2007), using updated data from the past several years to determine that these factors continue to limit growth. In addition to the nation's deteriorating roads infrastructure and problematic legal and administrative environment for firms identified by Bozu, et al, we also find that the costs of finance are substantially higher than in other countries in the region and are driven in large part by high deposit interest rates. Finally, we highlight several puzzles based on the most commonly used data. In particular, we note that cross-country comparisons on observed prices, surveys of enterprise managers, and ratings by sector experts and business leaders yield significantly different results for both higher and lower level nodes in the growth diagnostic methodology.

Introduction

Developing countries that engage with international donors are increasingly being asked to develop a prioritized set of areas for donor support. Moving beyond exhaustive Poverty Reduction Strategy Papers and generic recommendations based on Washington Consensus principles, these developing countries are increasingly turning to analyses that narrow the focus to those areas in which reform and investment would most promote growth. The "Growth Diagnostics" methodology laid out in Hausmann, Rodrik and Velasco (2005, henceforth HRV) offers one potential approach to such an analysis. HRV start with the premise that growth-promoting policies are highly context-specific, pointing to the variety of parameters within an endogenous growth model that both affect growth rates in the model and that empirically appear to vary considerably across countries. The diagnostic tree HRV develop is intended to enable economic policymakers in developing countries to use readily available data on output, institutions, human capital, and other variables to determine which of these parameters has the highest local elasticity to growth.

This paper examines the use of this methodology by policymakers in Moldova in the context of the country's engagement with the Millennium Challenge Corporation (MCC), a US government agency providing foreign assistance aimed at promoting economic growth. This is the first donor engagement with a developing country of which we are aware in which a country-led growth diagnostic exercise directly informed the development of a donor aid package. We highlight features of the process which shaped the usefulness of the findings to policymakers. In particular, public consultations in regional centers around the country may have strengthened the analysts' confidence in their otherwise data-based findings. We summarize the main findings of the Moldovan analysis, noting that institutional weaknesses governing commercial investment and deteriorating transport infrastructure were identified as the most binding constraints to growth. Using updated data, we revisit these issues, finding that they continue to limit growth—as do financial constraints, which now appear to be significant barriers to growth. The paper also identifies several puzzles based on the available data. In particular, we find that cross-country comparisons based on observed prices, surveys of enterprise managers, and ratings by sector experts yield significantly different results for key issues, including domestic finance and infrastructure. Moreover, differences in the availability of price, survey, and ratings data across nodes of the HRV tree affect the degree to which these nodes can be identified as binding constraints to growth.

This paper is organized as follows: In section 1, we provide background information on the MCC and the Moldova analysis. In section 2, we describe the data used in this analysis. We discuss the primary findings in section 3, assessing the degree to which low social returns, low appropriability and the high cost of finance represent binding constraints to Moldova's economic growth (sections 3.1, 3.2, and 3.3, respectively). In section 4, we discuss evidence toward prioritizing the single most crucial barrier to growth. Finally, we conclude in section 5.

1. The Context: The MCC and the Moldova Constraints Analysis

The Millennium Challenge Corporation was established by legislation enacted in 2003[1] with the mandate to deliver foreign assistance in a new and different way. Details of the institution were worked out at a time when a new global consensus was emerging on aid effectiveness, and many of these broadly accepted best-practice principles were explicitly incorporated into MCC's model for aid delivery.

To enhance the impact of its resources, MCC incorporated a country selection process to identify the countries that are most likely to use the funds it provides effectively. This selection process relies on a transparent country rating along 17 variables—all generated by credible, independent institutions—assessing current governance practices amongst all eligible low- and lower-middle income countries.[2]

To shape its engagement with selected countries, MCC places great emphasis on two ideas that sometimes may appear to be internally inconsistent. The first idea is that economic growth needs to be recognized as a central element of any successful development strategy. Although few development institutions explicitly disagree with this premise, few find it possible to embrace the central role of growth without using caveats, such as "growth is necessary, but not sufficient," or appending modifiers to growth, like "pro-poor" or "inclusive." From the outset, MCC has been willing to be more explicit that its underlying model was premised on the idea that economic growth, driven by private investment, is essential to poverty alleviation.[3]

MCC's model also reflects the idea that the development process must be owned and managed by local actors rather than donors and international experts. Although the direction of development might be known, the specific path, defined by policy choices and institutional development, would vary by country. Reflecting this philosophy, MCC structured its engagement with country partners to emphasize their role in developing the MCC program, called a Compact, around a series of investments and policy and institutional reforms.

In practice, these two ideas appeared to some to pull in different directions. The "growth focus" seems to be externally driven, while "country ownership" might suggest that MCC would support any locally-identified country priorities. Although initial MCC engagement with country counterparts had always included early and frequent discussions around the role of economic growth in poverty reduction and the identification of possible MCC investments to enhance the economic growth process, this focus sometimes appeared to be lost in the local political discussions that invariably emerged over the use of significant new grant resources.

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[1] See "The Millennium Challenge Act of 2003", as amended, available at http://www.mcc.gov/mcc/bm.doc/mca_legislation.pdf.

[2] Additional details on MCC's selection criteria are available at http://www.mcc.gov/mcc/selection/index.shtml.

[3] When adjectives are needed, MCC has most often used "market-led" and "broad-based" to capture the sense that growth needs to be driven by principles of efficiency and to acknowledge that a few countries, mostly resource-rich and governance-poor states, have been able to generate significant economic growth that did not deliver significant welfare gains for the broader population (including the poor). It is highly unlikely that such countries would pass MCC indicators and be selected as MCC partner countries. Moreover, MCC's project design and funding processes present many opportunities to avoid any investments that would not generate broad-based welfare gains.

In late 2006, MCC introduced the use of growth diagnostics as a tool for reconciling the "growth focus" and "country ownership" goals. By requiring the conduct of a growth diagnostic before any project ideas are developed, the analysis would both identify the most significant impediments to investment and growth and would establish and formalize a shared understanding that Compacts were expected to focus on public investments addressing these impediments. The practice of implementing this diagnostic tool in the MCC's context was documented in its *Guidelines for Conducting a Constraints Analysis.*[4] This guidance generally followed the framework laid out in HRV, with two changes. The first was an entirely cosmetic re-labeling of the process as a "Constraints Analysis" (CA). The second change was more fundamental, and that was to set aside the idea of a decision tree, with a required sequencing of decision nodes that culminates in the identification of a single most-binding constraint. Instead, MCC guidance laid out a series of end-node potential constraints that could be considered in any sequence; consistent with that approach, MCC guidance also de-emphasized the idea of a single constraint, describing instead a process that would yield a few most binding constraints (and reject the remaining nodes). The guidelines also specified that, although MCC would provide illustrative technical guidance and access to international datasets, its developing country partners would be responsible for undertaking this analysis and preparing the initial draft report. These preliminary findings would then be discussed with the MCC, leading to a final CA report that reflected a shared understanding of the key constraints to growth in the country.

The first opportunity to implement the CA in a newly eligible country occurred in Moldova, which was named as eligible for MCC funding in late 2006. In the following months, the Government of Moldova formed a dedicated unit (MCA-Moldova) to guide the development of the country's Compact proposal. The work of this unit toward a constraints analysis was launched in May of 2007 (MCA-Moldova 2007d). The core country team included the lead economist on all MCA-Moldova economics issues (Valentin Bozu), as well as several additional economists (Dumitru Caragia and Iuria Gotisan). Two MCC economists provided guidance on the CA framework and identified datasets that would prove useful in the analysis.

Over the ensuing three months, the Moldovan CA team collected data and proceeded through the possible end nodes. As preliminary findings were generated, the CA team pulled together a group of prominent local economists in other government and donor agencies (MCA-Moldova 2007b). These economists were not invited in their official capacities, but rather as a technical peer group that could serve as an initial sounding board. This interaction helped the CA team refine some of their analysis by identifying additional data sources and new questions that allowed the team to revise and strengthen their findings. Perhaps more importantly, this interaction with other local economists strengthens the confidence in the findings. These conversations demonstrated to the team that the framework generated rigorous results that withstood the scrutiny of their peers and prepared them for later conversations with non-economists.

A second innovation developed by the Moldovan CA team was an early "roadshow," conducted with the revised preliminary findings in hand (MCA-Moldova 2007a). The team left the capital city and visited 10

[4] Available at http://www.mcc.gov/mcc/bm.doc/12-conductingaconstraintsanalysis.pdf .

regional centers, where they arranged town hall meetings that included both government and civil society representatives. The basic questions were: 1) Are the main constraints to growth we have identified basically consistent with the participants' perceptions of the problems facing their region? 2) If not, what other constraints seem more pressing? These meetings were intended to offer an opportunity to "ground truth" the findings of what had been a desk-based exercise to that point. The Moldovan CA team noted broad agreement in most areas, with a few, notable disagreements that led to productive discussions in those regions that identified why, in some places, local constraints to growth might be different from an assessment of national priorities (see, for example, the discussion in Cimshlia, summarized in MCA-Moldova 2007d). At the same time, there was broad agreement between the quantitatively driven national-level constraints and the qualitative perceptions at the regional level, providing additional confidence in the validity of the analytical conclusions. Based on these discussions, a final document was authored by Bozu, Caragia and Gotisan in August of 2007 [hereafter BCG].

The Moldova CA served as the foundation for the development of the Government of Moldova's proposal for MCC funding. The proposal, submitted on February 28, 2008, sought to address issues in four sectors, including roads transport and irrigated agriculture (MCC 2009c). Project appraisals and negotiations over the ensuring eighteen months narrowed the scope of the Compact to focus on these latter two sectors, assuring that the Moldovan government would pursue key institutional reforms to ensure that the capital investments in each sector would be adequately maintained. On November 30th, 2009, MCC's Board of Directors approved a five-year, $262 million Compact with the Moldovan government (MCC 2009b). The Compact provides $132.8 million to repair a section of an arterial highway between the capitals of Moldova and Ukraine, Chisinau and Kyiv (MCC 2009a). The Compact also includes $101.8 million in funding to repair up to 11 large irrigation systems servicing 15,500 hectares, primarily along the two major rivers in the country. This latter project also includes technical assistance to support the establishment of water user organizations to manage and operate the rehabilitated systems and the legal transfer of such responsibilities to these organizations to do so. The project also includes a financing facility that will help extend financing to farmers and entrepreneurs for investments in farming, processing, and marketing higher valued fruits, vegetables and grains. This is the first donor engagement with a developing country of which we are aware in which a donor-supported, country-led growth diagnostic exercise directly informed the development of a donor aid package.

Since the completion of Moldova's CA, five newly eligible countries have also completed CA's and are at various stages of developing Compact proposals based on this work (Malawi, Jordan, the Philippines, Zambia, and Indonesia[5]).

2. Data sources

The data we use are largely identical to those used in BCG, except where we include data from more recent that were not available in 2007. Data on the appropriability of the returns to economic activities

[5] See MCA-Malawi 2009 and MCC 2009d, 2009e, 2009f and 2009g.

are largely drawn from three sources. Micro-risks to these returns are observed largely based on the data from the World Bank Doing Business Surveys (2004-2010), conducted by surveying approximately 30 legal experts in Moldova who routinely interact with or administer the laws, regulations, and systems that the survey addresses. These are complemented by direct surveying of firm management via the World Bank's Enterprise Surveys (296 firms surveyed in 2005 and 363 in 2009). Macro-risks to these returns are observed at the aggregate level in terms of the country's inflation, fiscal balance and external position, informed largely by data from the World Bank's World Development Indicators (WDI)—drawn from the National Bank of Moldova—and estimates by the Economist Intelligence Unit (EIU).

Optimally observing the social returns to economic activity would require data on the actual returns or equilibrium prices for investment in these various activities. These data are available to a limited extent for human capital, where returns to additional years of education in the current system can be estimated., and are used to help indicate whether a shortage of skills associated with additional education is most intensely limiting the extent of profitable activity. Inferring the returns to other forms of physical capital is more challenging, particularly in terms of public infrastructure. This is largely based on benchmarking of the quantity and quality of this infrastructure relative to other countries in Moldova's region, and requires assuming that the returns at a given quantity and quality level of infrastructure are comparable across countries. To infer the returns to agricultural inputs, including water resources, we use data from the World Development Indicators (WDI) produced by the World Bank drawing from the work of the World Meteorological Organization and the national accounts of the countries considered. We also utilize data on the degree of water usage and resources produced jointly by Yale and Columbia Universities, in collaboration with the World Economic Forum and the European Commission.

Information on the cost of finance is drawn primarily from aggregate annual data from the WDI, as well as the aforementioned Doing Business and Enterprise Surveys. We use the firm-level Enterprise Survey dataset for 2009 to study the degree to which access to different sources of finance varies with firm size. Finally, data used to prioritize among the major branches of HRV's diagnostic are also drawn from the World Bank Country Performance and Institutional Assessment (CPIA) dataset for 2005-2009, as well as from the most recent World Economic Forum *Global Competitiveness Report 2008-9* (the most recent report which includes Moldova).

We generally compare conditions in Moldova to those in other countries in Eastern Europe and Central Asia. The set of comparator countries varies somewhat depending on data availability for each particular source.

3. Findings

The growth diagnostic methodology developed by HRV is a tool for prioritization, using data on each branch of the tree to rank order the branches that appear to be the most binding for economic growth. Even with relatively good and varied data, this rank ordering is largely based on qualitative comparisons

by the analyst. Moreover, the comparisons can be more challenging when evaluating higher nodes, as the data on different branches is more comparable at lower levels (say, between different forms of infrastructure) than higher ones (say, between infrastructure and finance). As a result, the diagnostic can help prioritize more easily among lower level branches, identifying the three or four most binding constraints, with one of these in each of three or four main branches of the diagnostic tree. We offer attempts to prioritize among these major branches in section 4.

We find that Moldova's case indeed includes constraints along all major branches. Low social returns to investment *do* appear to be a major constraint, as the quality of the roads infrastructure in the country is very poor and transportation costs are very high—even compared to other landlocked countries. Low private appropriability of those social returns *also* appears to be an important constraint. The relatively high administrative costs of trading across borders, the rigidity of employment, and other features of the legal environment for businesses are more problematic than in other countries in Eastern Europe and Central Asia. Finally, the cost of finance also appears to be a binding constraint for growth, as both nominal and real lending interest rates are relatively high—driven in large part by high deposit interest rates—and firms in Moldova are more likely to cite access to credit as a major constraint than anywhere else in the region.

We also find that these conditions have not changed dramatically in the nearly 2½ years since BCG completed their analysis. The Government of Moldova has made large strides in improving certain features of the legal environment for businesses, particularly in reducing the time, procedures, and costs of starting a business. Nonetheless, the legal and administrative environment for businesses continues to lag behind many other nations in the region on many other dimensions. The costs of finance for domestic firms, meanwhile, have remained higher than elsewhere in the region, and the perceptions of these costs by firms have worsened significantly. These factors lead us, unlike BCG, to identify the costs of finance as a key constraint to growth.

3.1 Low Social Returns

BCG considered both the scarcity of the factors of production and the productivity of production technologies in their diagnostic, arguing that infrastructure weaknesses were the most binding constraint limiting social returns from production in Moldova. BCG found that the country enjoys the highest share of arable land in the region and a relatively low incidence of endemic diseases. Moreover, the country's human capital appears to be comparatively well-developed, with returns to higher education among the lowest in the region, enterprise perceptions of the labor force quality relatively strong, and a substantial amount of labor force out-migration from Moldova. The environment for innovation appears to be relatively supportive and is unlikely to be a key constraint limiting the productivity of these human and natural factors. In fact, the diversification and sophistication of the country's exports, the number of patents issued within its borders, spending by its firms on research and development, and these firms' adoption of new production technologies all compare favorably with those of other countries in the region.

BCG do point to the country's relatively weak infrastructure for ground transport—particularly its deteriorating roads—as a key constraint to production. In addition, the country's agricultural sector appears to face significant shortages of water resources. Here, we review the evidence for these constraints, finding that both elements continue to limit economic production.

Roads

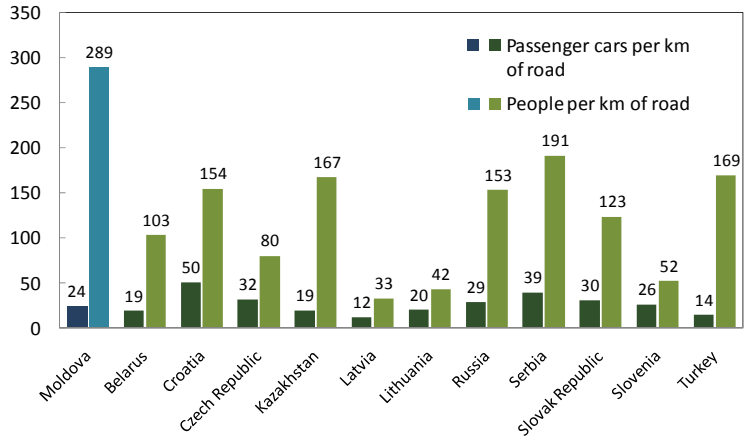
As a country with a small domestic market for most goods, Moldova is highly reliant on external trade. Faye, et al (2004), estimated the relative freight cost of getting goods to international markets on a scale of 0 (less costly) to 1 (more costly). Moldova's score on this index was 0.86, second highest among landlocked countries in Eastern Europe and Central Asia.

Table 1: Transportation Costs

Country	Afghanistan	Armenia	Turmenistan	Kyrgyzstan	Moldova	Azerbaijan
Index of Freight Costs	0.38	0.51	0.77	0.81	0.86	0.92

The cost of transporting goods to international markets include both costs to get those goods to the border via the national ground transport infrastructure and the costs of getting them from the border to international destinations. BCG identified the former as a clear constraint to Moldova's growth, particularly the scope and deteriorating quality of the nation's road network. In 2006, the country had approximately 16,800 km of roads in the country, 22% of which were national roads and 78% of which were secondary roads (World Bank 2007). Relative to its geographic size, the density of the roads network appeared to lag behind the median level in the region in 2004 based on WDI data. Despite the relatively low ratio of passenger vehicles per 1,000 people (84.03 in 2006, the 2nd lowest among the 16 countries with data on vehicles in the region), the country had the 5th highest ratio of vehicles per km of road (approximately 20 vehicles per km of road), implying that the volume of traffic on existing roads is relatively high. High usage of existing roads relative to other countries in the region suggests that the marginal value of additional road construction is also likely to be higher than in other regions if this value is correlated with the volume of traffic.

Chart 1. People per kilometer of road andvehicles per kilometer of road, by country, 2006



Source: World Bank World Development Indicators

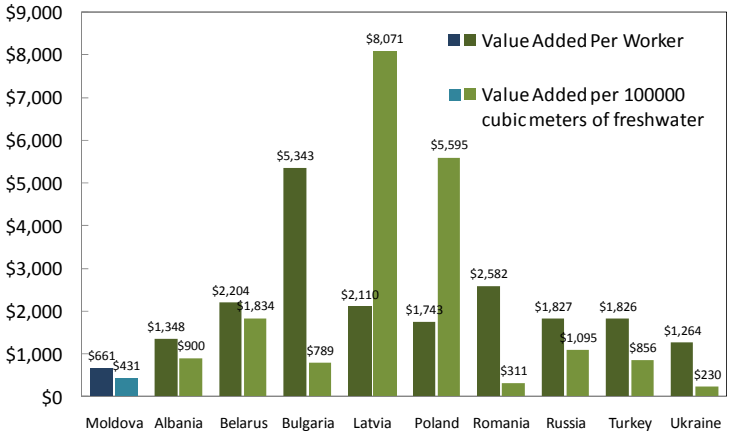
In addition to a relatively high marginal value to extending the road network, rehabilitating the country's existing roads infrastructure also appears crucial. Between 1992 and 2006, the share of the country's roads that were rated as "good or fair" by the World Bank fell from 70% to less than 10% (World Bank 2007). With relatively fewer resources devoted to road maintenance over the past two decades, the value of the road network has deteriorated, with the entire network valued at only $8.4 billion in assets (World Bank 2007), $3.6 billion less than would have been the case had the network been sufficiently maintained. In many countries, such maintenance is funded by levying (additional) taxes on gasoline and diesel, as use of these fuels is almost entirely concomitant with use of the roads network but avoids additional toll collection mechanisms. As BCG point out, average prices for gasoline and diesel in Moldova were relatively low in 2006 compared to other nations in the region. By 2008, the average pump price of gasoline in Moldova was US$ 1.20 per liter, relatively comparable to the average for the region of US$1.13 (WDI data). These price levels suggest that marginal additional levies to finance road maintenance would be unlikely to raise gasoline and diesel costs substantially above the average in the region.

Water Resources in Agriculture

Moldova faces significant shortages in the water resources available for household consumption and for economic production. As BCG note, the country possesses internal freshwater capacity of just 238 cubic meters per year per person, the lowest such total in Eastern Europe (WDI data). The 2008 Environmental Performance Index (EPI) produced by Yale and Columbia Universities suggests that 54.7% of the country's area is under water stress (where water usage outstrips water capacity by more than 40%). Water is particularly scarce as an input into agricultural production, and, partly as a result, agricultural production per worker in Moldova is particularly low. Here, we consider as relevant comparators only countries in Eastern Europe, where agro-climatic conditions are relatively similar, omitting Central Asian nations with much drier climates. In 2000 (the latest year for which agricultural production, employment, and water use are jointly available in the WDI), Moldova produced only US$ 661 of value per agricultural worker, the lowest such total in Eastern Europe. At the same time, the

country devoted 32.9% of its freshwater withdrawals to agriculture, producing $431 of agricultural value added per 100,000 of cubic meters of freshwater. The productivity of water usage was actually higher than in several countries in the region, including Ukraine and Romania ($230 and $311 of value added per 100,000 m^3, respectively). Since the productivity of water usage is higher relative to other regional comparators than the productivity of human capital, this provides evidence that water resources are more likely to be the binding constraint on agricultural production.

Chart 2. Agricultural Productivity of Labor and Water Usage by Country, 2000



Source: World Bank World Development Indicators

As BCG note, a relatively small share of the water used in agriculture is withdrawn via irrigation.[6] Indeed, the EPI rates the degree of water stress in the country attributable to irrigation as relatively low, suggesting that irrigation usage could actually be expanded to improve the overall efficiency of water usage.

The low productivity of agricultural labor may also be driven by other constraints, including the transitioning of the sector from large state-owned corporate farms to smaller private farms. Interestingly, among the 10 countries in Eastern Europe with data available on all agriculture outputs and inputs, Moldova produces the 3rd lowest totals of value added (VA) per of water, VA per square kilometer under production, and VA per tractor used (WDI data). These suggest that the productivity of all agricultural inputs—including water and other inputs—is generally low in Moldova. Given that agriculture continues to constitute an important share of agricultural production (11% of GDP in 2008), it appears that transitioning the ownership structure of agricultural land, reforming subsidy policies, and improving the efficiency with which water resources are delivered could substantially improve the prospects for economic growth.

[6] BCG cite this share as 33% in Moldova, substantially below the rates of 57% and 52% in Romania and Ukraine, for example.

3.2 Low Appropriability

Even when strong social returns for additional investment exist, weak prospects for individuals to appropriate the returns from these investments—caused both by idiosyncratic and systemic risks—may reduce the extent to which these investments are made. Organizing institutions to support a market-based economy continues to be a broad, multi-faceted challenge in Moldova, including allowing quick and inexpensive entry for new firms into most markets, allowing these firms to flexibly adjust their employment levels in response to their needs, ensuring that court systems effectively and fairly enforce contracts and mediate other disputes, and providing public services without incentives for public servants to require side payments for these services. Macroeconomic risks associated with inflation, public debt, and external balances are also key features investors consider in their decisions, particularly in the context of the recent economic crisis.

Microeconomic risks

Although recent work has begun to disentangle the effects of various institutions on economic growth (see, for example, Acemoglu and Johnson (2005) and BenYishay and Betancourt (2009)), the level of aggregation of institutions in these studies still precludes useful inference for comparative improvements in more narrowly defined institutions, such as regulations around business closure and property registration. Thus, one often relies on benchmarking of conditions in a country relative to those in the region or at a similar national average income level. BCG used this methodology and found that Moldova's conditions for doing business lag behind those of most other nations in the region, ranking 20th out of 27 countries in the Eastern Europe and Central Asia region in the most recent year of the WB Doing Business surveys (the 2010 survey wave, reflecting conditions in 2009).

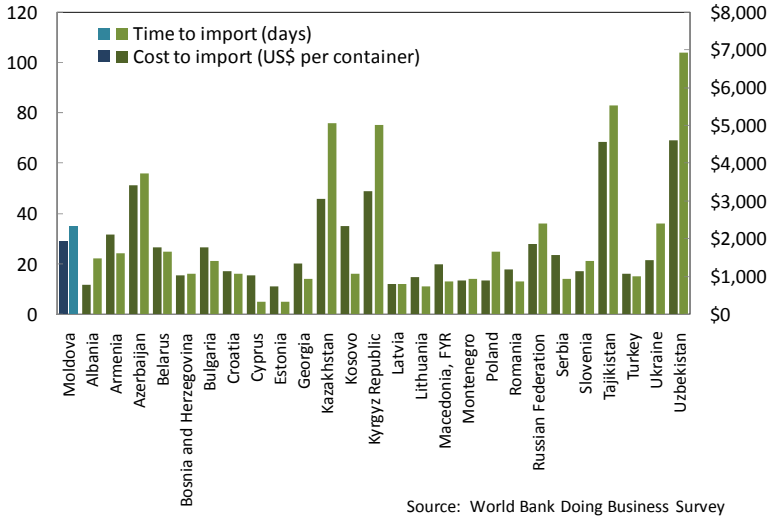
Most problematic among these conditions appear to be the administrative costs of trading across borders, the rigidity of employment, limited investor protections, and the high costs of opening and closing a business. These constraints occur against the backdrop of broader challenges in the form of corruption and relatively weak confidence in the court system.

Specific constraints	Broad constraints
High time and cost to import/export goods	Corruption
Labor rigidity	Confidence in the court system
Insufficient investor protections against moral hazard by firm directors	
High costs of opening and closing a business	

The time and cost to import and export goods into and out of Moldova are both high—on average, 35 days and nearly US$2000 to import one container into Moldova, and 32 days and $1,815 to export a similar container in 2010 (Doing Business data). These have changed little over the preceding 5 years. Aggregating across these features, the country's environment for cross-border trade ranks 140th globally and 21st in the region in the most recent year available. Notably, the 2005 and 2009 enterprise surveys show similar evidence that international trade is perceived as a key barrier to growth by Moldovan

firms. In the 2009 survey, 27% of firms identified "Customs & Trade Regulations" as a major constraint in Moldova. The regional average of firms reporting this constraint in the most recent survey wave available for each country is only 13.4%, making Moldova's rate twice as high as the average in the region. These administrative costs directly reduce the net social returns from producing goods for export markets and producing goods that use imported inputs. For a nation with a relatively small domestic market, these costs are likely to be substantial.

Chart 3. Import time and cost, By Country, 2009

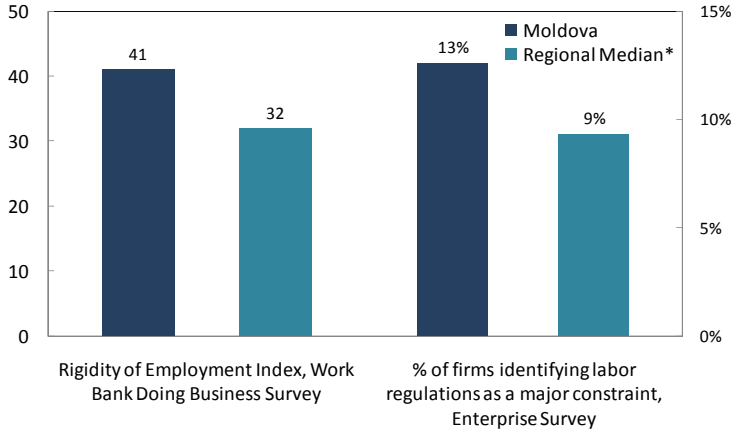


Source: World Bank Doing Business Survey

Labor force turnover is also particularly costly in Moldova, where laying off workers because of redundancy involved significant legal and third-party authorizations and required payments to the workers that represented more than 9 months of salary, according to the most recent Doing Business survey wave. These conditions ranked Moldova 21st in the region and 141st globally in terms of its aggregate ease of employing workers. However, whether these conditions represent a substantial economist cost and barrier to growth remains a separate issue. The empirical literature linking more stringent labor regulations to slower aggregate growth in developing country contexts is relatively sparse.[7] Moreover, only 12.6% of firms surveyed in the 2009 Enterprise Survey reported labor regulations to be a major constraint, only marginally higher than the 9.7% regional average and 11.9% global average. One possible explanation may be that the relatively stringent regulations largely affect segments of the labor market in which the growth in value added is not particularly constrained (lower skilled labor, for example). Meanwhile, the use of more skilled labor in Moldovan firms appears to be much more constrained, though these constraints may be neither regulatory in nature nor features captured in the Doing Business survey.

[7] Although Botero, et al (2004), show that more intensive labor market regulation is associated with higher unemployment and lower labor force participation, their study does not link these effects to aggregate economic production. Moreover, the authors show that the extent of labor market regulation is highly correlated with other features of the regulatory environment inherited through the transplantation of legal systems. Identifying the specific effect of labor market regulations on aggregate production in cross-country historical data, therefore, is likely to remain difficult.

Chart 4. Rigidity of employment regulations, Moldova and regional median, 2009



*Regional composition varies slightly between the two surveys

Similarly, the Doing Business and Enterprise Survey data provide contradictory views on the tax regime in Moldova. The 2009 Enterprise Survey indicated that 48.8% of Moldovan firms viewed tax rates as a major constraint, while the regional average was only 40.1%. However, the average total taxes and tax administrative costs that a medium-sized firm in Moldova faced in 2008 was 42.6% of its total profits, lower than the 48% average rate in the region that year. Since then, the tax rate has declined even further (a similar firm would pay only 31.1% of its profits in taxes this year). Indeed, although the country ranked 101st globally in terms of the burden for paying taxes in the most recent Doing Business survey wave, this was four spots better than the regional average of 105. Clearly, relying on regional benchmarking in a growth diagnostic due to a scarcity of price data on the particular constraint can lead to over- or under-stating the true value based on the regional mean. Moreover, it is puzzling that Moldovan firms perceive tax rates to be more problematic than the average firm in the region even though the rates they face are actually lower. One possible explanation may be that firm perceptions may evolve more slowly than regulatory changes. Indeed, the total tax rate faced by the medium-sized Moldovan firm in 2006 was 48% (Doing Business data). However, the average regional rate has declined in parallel with that of Moldova (from 54.5% in 2006 to 43.3% this year), making the "delay in perceptions" argument somewhat less likely. Nonetheless, there could be cross-country differences in the way firm managers form their views on the tax regimes they face that become relatively ingrained and that evolve only over longer periods of time. Since the main economic cost from these tax rates is their distortionary effect on investment decisions, the lag in the response of firm perceptions to reforms by the Moldovan government suggest that these costs may continue to be felt over the next few years. Alternatively, firm managers might simply continue to complain about taxes when surveyed even while updating their investment decisions to reflect the actual tax rates they face, suggesting that the distortionary cost has already declined.

More directly related to investment decisions is the legal environment for equity investors in Moldova. Moldova's performance here, as rated by the Doing Business indicators, is particularly problematic, ranking 109th globally and 22nd regionally in the most recent wave. This rating is mostly driven by one

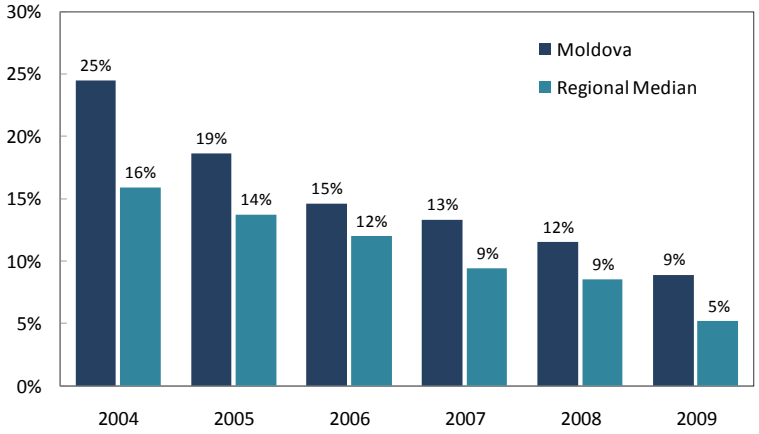
component of the Doing Business assessment: its extent of director liability index, which primarily examines the ability of minority shareholders to hold a firm's management or directors' liable for transactions that are unfair, oppressive or prejudicial to these shareholders. On this component, Moldova receives a score of 1 on the scale of 0 (worst) to 10 (best), tied for the worst score in the region. These features have remained constant over the past five years, and stand in stark contrast to other elements of the legal environment which actually provide as much protection to investors as available in the average country in the region or even the OECD. These include the extent of disclosure of transactions (scored 7 out of 10 in the most recent wave) and the ease of shareholder suits against a company (6 out of 10).[8] It appears that the key issue in Moldova is the degree to which company directors can act with relatively little fear of individual liability. Other shareholders may be concerned about the moral hazard issues this environment creates for directors, including incentives for tunneling and transactions that may be privately beneficial to directors but not to the company. Nonetheless, the impact of this issue on investment levels may not be as severe as the director liability index indicates, especially if investors considering purchasing a minority stake in a firm are more concerned with their ability to hold the firm itself liable rather than the moral hazard distortions for individual directors.

Two other features of the business legal environment continue to fall below the regional median in Moldova: the costs of starting and closing a business. Although neither procedure requires more time than in the median country in the region, both involve higher net costs. The most recent Doing Business survey wave estimates that the full cost of starting a business in Moldova amounts to approximately 7% of income per capita, well above the median cost of 4.8% and the 17th highest cost in the region. This is an area in which Moldova has made substantial recent progress—as have many other countries in the region. In 2004, the cost of opening a business in Moldova was 24.5% in 2004, while the median cost in the region was 15.9%[9]. This is clearly an area on which the Moldovan government is already focused, and where further improvements could bring the cost down to less than 2%, as achieved in several other economies in the region (Belarus, Bulgaria, Estonia, and Slovenia).

[8] These indices have remained constant for Moldova since 2005.

[9] Of course, part of the change in these costs reflects the growth in per capita incomes between 2004 and 2010. Nonetheless, the 70% reduction both in Moldova and in the regional median is far greater than the total income growth over the 6-year period.

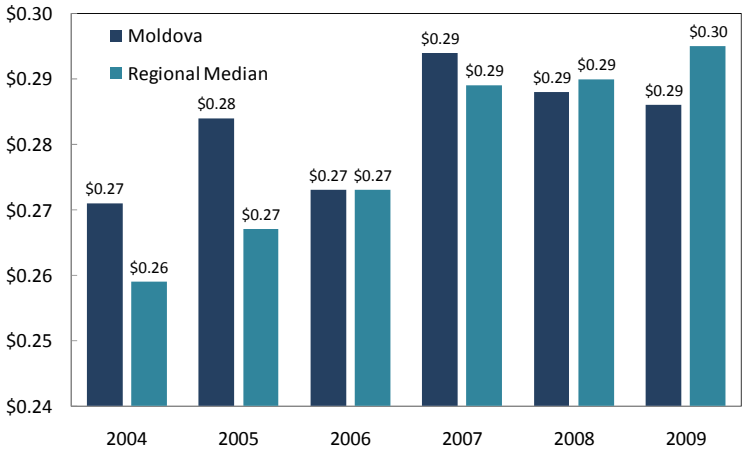
Chart 5. Cost of starting a business, as a share of per capita income



Source: World Bank Doing Business Survey

Closing a business, meanwhile, involved recovering only 28.6 cents for each dollar of the firm's market value, slightly lower than the 29.8 cents recovered in the median country (Doing Business data). This is an area in which Moldova has not made consistent progress, while others in the region have made and consolidated their progress (see graph below). Creditors and other claimants may be particularly concerned about their prospects for recovering their claims should a firm become insolvent.

Chart 6. Recovery rate, cents on the dollar

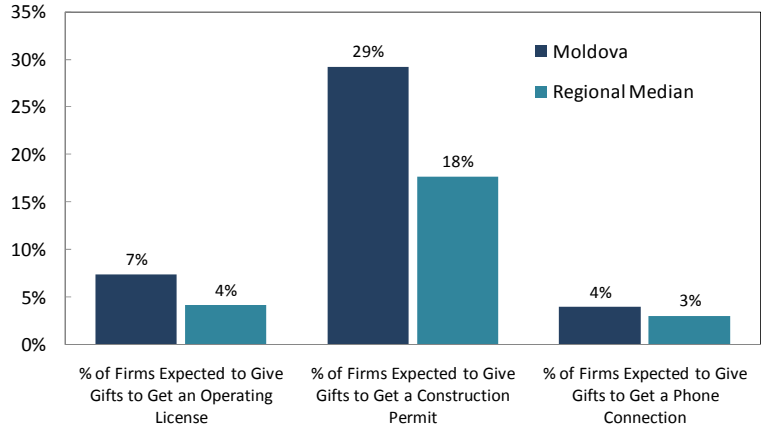


Source: World Bank Doing Business Survey

In addition to these specific features of Moldova's legal environment for businesses, broader issues also significantly reduce the appropriability of the returns by private investors. Corruption continues to exert a major influence, with 40.9% of respondents in the 2009 Enterprise Survey reporting that corruption represents a major constraint to their business. This is the 6th highest level among the 23 Eastern European and Central Asian nations in which an Enterprise Survey was conducted in 2009. Similarly, the "Incidence of Graft Index" tallied by the World Bank Enterprise Survey team indicates that in 11.4% of all solicitations for public services, firms were either expected or requested to pay a gift or informal

payment—the 5th highest proportion in the region. In particular, more than 29% of all firms in the survey reported being expected to give gifts in order to obtain a construction permit. The range for this share of firms being expected to pay gifts to obtain other public services varied from 3.9% for a telephone connection to 7.37% to obtain an operating license, with gifts for import licenses (6.7%) and electrical and water connections (5.6% and 7.2%) falling in this range. This is consistent with stylized evidence from the Doing Business surveys, which calculate that obtaining a construction permit requires 30 procedures and 292 days on average—the 7th most procedures and 8th longest process in the region.[10] This bureaucratic process offers numerous opportunities at which gifts from firms can be extracted. This would suggest that investment in fixed capital would be particularly constrained in Moldova, while more mobile forms of capital that can be house in existing structures and then transported may be less effective.

Chart 7. Share of firms expecting to give gifts for public services, 2009



Source: Enterprise Survey

At the same time, Transparency International's Corruption Perceptions Index (CPI) ranked Moldova's conditions 7th best in the immediate region and 89th worldwide (Transparency International 2009), casting the situation as less severe than implied by the Enterprise Surveys. The CPI aggregates results from a variety of surveys of business people and assessments by country risk analysts.[11] One possible cause for this difference in ratings may be the difference in composition of survey respondents and

[10] Other administrative processes in Moldova are not nearly as lengthy or costly. Processes for registering property, for example, are actually some of the speediest and least costly in the region—and have improved significantly in the past seven years. Registering a transaction for a piece of real property in Chisinau's peri-urban areas requires only 5 procedures and 5 days and costs less than 0.9% of the property's value (the 9th, 4th, and 10th lowest values in the region, respectively).

[11] Moldova's 2009 CPI was calculated using the following sources: The 2009 Bertelsmann Transformation Index produced by the Bertelsmann Foundation, the 2009 Country Risk Service and Country Forecast by the Economist Intelligence Unit, the 2009 *Nations in Transit* by Freedom House, the 2009 Global Risk Service by IHS Global Insight, the 2008 Country Policy and Institutional Assessment by the World Bank, and the 2008 *Global Competitiveness Report* by the World Economic Forum.

expert assessments in Moldova. The 90% confidence intervals around Moldova's CPI could place Moldova as high as 4th and as low as 10th—the latter being the median in the 20-country sample for Eastern Europe and Central Asia. Given the relative frequency with which respondents in the Enterprise Surveys reported being expected or requested to pay gifts or informal payments for public services, it appears that corruption may nonetheless represent a major constraint to growth.

Confidence in the judicial system also appears to be particularly problematic in Moldova. BCG identified this issue as a key constraint based on the 2005 Enterprise Survey, in which approximately 35% of respondents indicated their confidence in the system, the lowest such level among the 13 countries in the region with surveys conducted that year. The 2009 survey wave found that 31.88% of firms believed the court system was fair, impartial and uncorrupted, the 8th worst such level among the 23 countries in the region where surveys were conducted. The 2009 survey wave also cited the "functioning of the courts" as a major constraint among 33.85% of Moldovan firms, the 2nd highest total and substantially higher than the 21.29% of firms that cited this major constraint in the median country in the region. Thus, although both the court system's processes and its outcomes appear to be problematic from the perspective of private firms, it is the former that are particularly challenging. Curiously, enforcing contracts in Moldova does not appear to entail a particularly cumbersome, costly, or lengthy process relative to those in other nations. The most recent wave of the Doing Business surveys suggest that enforcing a contract in Moldova involves 31 procedures and costs equivalent to 21% of per capita income. The process takes, on average, 365 days. In the median country in the region, however, the process requires 37 procedures, costs of 23% of per capita income, and 390 days. One explanation for the difference between the Enterprise Survey and Doing Business results might be their difference in scope: The Doing Business surveys refer to a contract between a seller and a buyer for which the buyer fails to provide a payment (the methodology is detailed in Djankov et al (2003)). This example is extremely useful for its specificity and standardization across countries, but it (by design) does not cover a variety of other ways in which a firm might interact with the legal system. The aforementioned issue of lawsuits by a firm's shareholders offers one example of an instance in which the legal system may be both cumbersome and potentially partial to one party.

These institutional features constrain private investment in new firms by reducing the share of the value from these enterprises that private investors expect to receive, accounting for the probability that this value may instead by appropriated by the firm's directors and government costs. Delineating which of these features is most constraining private investment—the rigidity of employment, costs associated with starting and closing a business and with importing and exporting goods, and weak investor protections against director liability—remains challenging. The Doing Business surveys consider an objective set of comparable situations to generate cross-country comparisons of issues considered to be important, but they do not ask respondents to rank order these issues in terms of their importance. The Enterprise Surveys, meanwhile, provide some rank ordering by comparing the share of respondents citing a given issue as a key constraint, but the treatment of the issues discussed above is unbalanced, making the rank ordering problematic. Moreover, as is generally the case with Enterprise Surveys, it is not clear that asking *existing* firms about their challenges accurately reflects the constraints to investment—particularly investment in *new* enterprises.

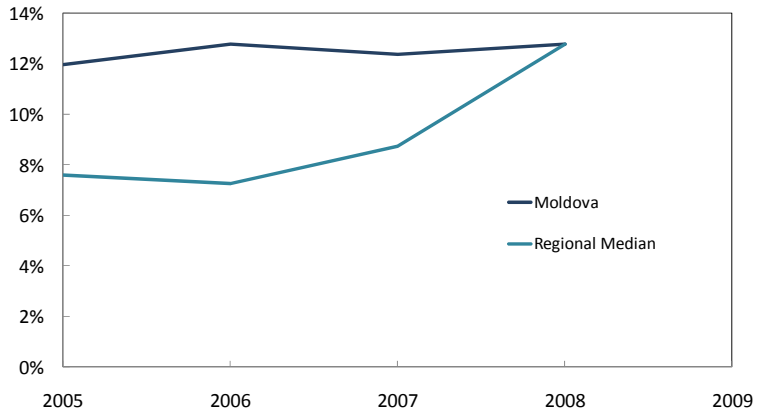
Finally, a country's regional rank and its distance from the regional median (or some other statistic of the distribution) vary considerably across these two instruments, even for the same issues. Some of these differences can be explained by differences between actual practices and perceptions of those practices. Other explanations include differences in the geographic and distributional scope of these surveys: the Enterprise Surveys are intended to be representative of all formal enterprises, while the Doing Business surveys cover conditions faced by the average firm in the capital city (Chisinau, in the case of Moldova). Nonetheless, these differences suggest that caution is needed in making inferences and in generally interpreting the rank ordering of issues on the basis of these survey results.

Macroeconomic Risks

The ability of a venture's owners to appropriate the returns from their investment depends on the extent to which macroeconomic risks negate or dissipate these returns. As we write this paper, the effects of the economic crisis continue to be sharply felt in Moldova, as elsewhere. In 2009, Moldova's GDP is expected to contract by 9% in real terms, a much steeper decline than in other parts of Eastern and Central Europe. Although positive GDP growth is expected to resume in 2010, the macroeconomic outlook remains uncertain. Moreover, a number of areas in which Moldova had recently made considerable progress (government debt, for example) may continue to experience reversals in the next several years. Here, we aim to describe conditions in 2005 and 2006 (the timeframe considered in BCG's analysis), as well as the evolution of these conditions both pre-crisis (2007 through the first half of 2008) and post-crisis (latter half of 2008 and beyond). In the present environment, macroeconomic risks are likely to pose major constraints to growth in Moldova, as they do in many other nations.

In their analysis, BCG identified Moldova's relatively high inflation as an important, though manageable, risk. Indeed, rising inflation could shrink the real value of a venture whose benefits accrue in the future. BCG suggested that the country's 12% annual inflation in 2005-2006 could become worrisome if its volatility increased or if it trended further upward. Interestingly, neither of these features has come to fruition. The country's inflation in consumer prices had remained stable at an annual average of approximately 12% through 2008 (though these are expected to drop considerably for 2009). At the same time, a number of neighboring countries saw their rising rates surpass Moldova's over this time period. Since then, inflation has dropped significantly as demand for consumer products has shrunk in response to the economic crisis. Nonetheless, given Moldova's experience with high inflation rates through most of the past decade, longer term prospects for investment may indeed depend on the government's ability to control inflation.

Chart 8. Annual Consumer Price Inflation, Moldova and Regional Median



Source: World Bank World Development Indicators

An unsustainable level of government debt may also give investors pause about the risk to their future returns should the government raise its tax rates to meet its future obligations. Moldova's public debt level appears to be manageable, with the central government's debt having declined markedly as share of GDP between 2005 and 2008, partly as a result of a relatively balanced budget over the time period. The economic crisis has taken a major toll on the government's revenues, and its budget deficit is expected to grow to 7% of GDP in 2009. As a result, the government's public debt is estimated to rise substantially over the next few years, negating the reductions achieved in the preceding half-decade. The country's annual external total debt service, meanwhile, may be even more problematic. In 2005, Moldova's external debt stock stood at approximately 68% of its GDP (WDI data). Even as GDP grew significantly between 2005 and 2008 and the central government's debt as a share of GDP dropped, Moldova's external debt stock remained relatively constant, standing at 67% in 2008. The country's annual service of this external debt amounted to 7% of GNI, notably higher than the regional median (4.7%). Moreover, its external debt stock is expected to continue grow by an additional 32.5% over 2008 levels by 2011, even as GDP first contracts and then gradually recovers. Thus, EIU estimates suggest that this external debt stock may reach 95% of GDP in 2011. Although some developed countries maintain higher external debt positions, this level for a low income country may indeed give some investors pause for concern over the ability of the government to meet its future obligations without resorting to measures that might reduce the value of their investments.

Finally, BCG identified the country's expanding current account deficit as another issue to track. Indeed, between 2005 and 2008, the country's current account deficit expanded faster than elsewhere in the region. Some of this rise was a result of the spike in oil prices experienced in 2008, as the country imported more than 90% of its energy resources. As these prices have dropped significantly over the past year, so has Moldova's current account deficit, though it may remain larger than pre-oil spike levels. These trade imbalances have been financed by the stream of remittances, which, after a downward shock from the economic crisis, are anticipated to gradually return to pre-crisis levels.

Nonetheless, these imbalances may yet be a source of uncertainty for investors concerned about the country's stability over the next two, five, and even ten years.

3.3 High Cost of Finance

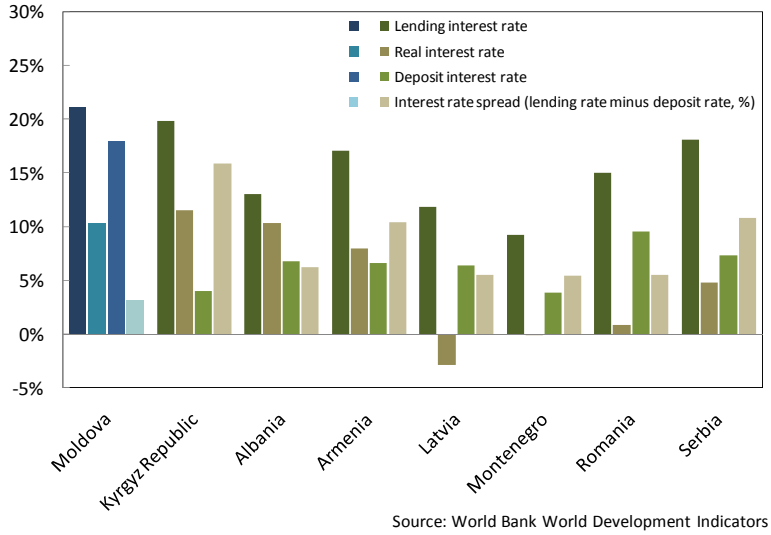
To what degree is Moldova's growth constrained by the cost of finance? In their 2007 analysis, BCG did not identify the cost of finance as one of the key constraints to economic growth, although they did observe that nominal interest rates were relatively high and several other features of the financial sector could be problematic. In particular, BCG noted that longer term loans were relatively scarce, that non-banking financial institutions—including capital markets, insurance firms, and micro-credit organizations—were underdeveloped, and that the lack of a credit information bureau may have been inducing credit rationing. Interestingly, BCG argued that lending by banks was constraining investment among smaller and medium firms to a greater degree than among larger firms. We find instead that the costs of finance—including both price and non-price elements—are a substantial constraint on investment by many Moldovan firms, both large and small alike.

In particular, we find evidence that

(a) Both nominal and real financing costs to firms are higher in Moldova than elsewhere in the region (having risen slightly since 2005);
(b) These costs appear to be driven by higher bank deposit rates than elsewhere, rather than higher intermediation costs;
(c) Firms in Moldova are much more likely than elsewhere in the region to believe access to credit represents a major constraint, and rely on non-bank sources of financing for investment to a greater degree than elsewhere;
(d) Nonetheless, the quantity of credit provided to the private sector has risen dramatically in the past decade, as it has in other countries in the region.

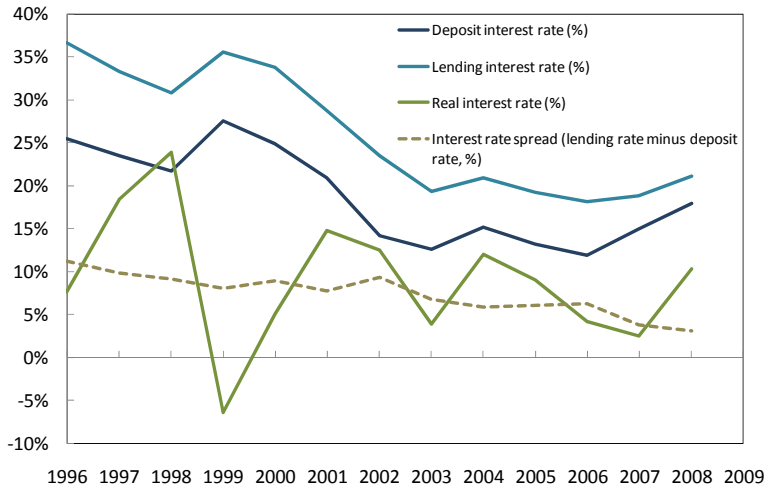
The costs of finance in Moldova are among the highest in the region, with the nominal lending rate averaging 21.1% in 2008 and the real rate averaging 10.3%--both the second highest rates in the region (WDI data). After declining precipitously between 1999 and 2003, the nominal rate has remained relatively constant over the past five years, with the real rate fluctuating in correlation with fluctuations in the inflation rate. In fact, between 2005 and 2009, the real interest rate in Moldova has risen 14%, while the median country in the region has seen as decline of 40%. Combined with evidence from the 2005 Enterprise Surveys discussed below, it is not entirely surprising that BCG did not identify the cost of finance as a key constraint to economic growth in their earlier analysis; these costs almost certainly represent an important constraint in the current environment.

Chart 9. Borrowing Costs by Country, 2008



Source: World Bank World Development Indicators

Chart 10. Borrowing Costs, Moldova, 1996-2008



Source: World Bank World Development Indicators

Much of the decline in the lending rate earlier in the decade is correlated with a rapid decline in the deposit rate. The interest rate spread has declined more gradually over the past decade, dropping from nearly 10% in 2002 to 3.1% in 2008. In the relatively competitive Moldovan banking sector, these falling rates reflect real reductions in the costs of financial intermediation. At the same time, deposit rates have actually risen in the past several years, offsetting much of the reduction in the lending rate due to falling intermediation costs.

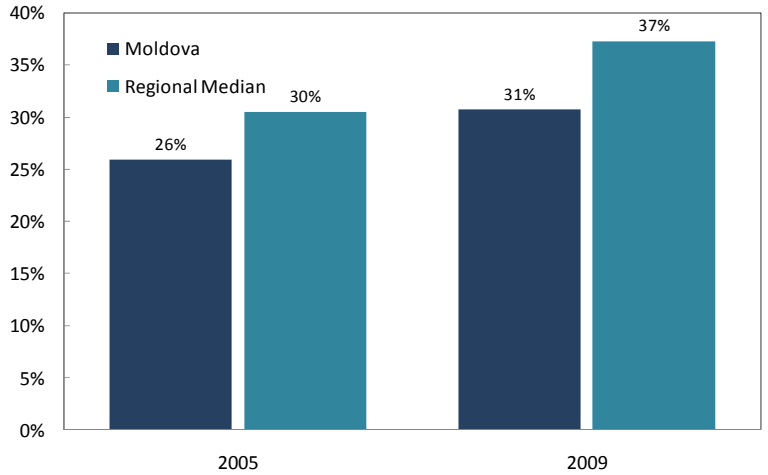
The relatively high cost of credit in Moldova is reflected in firms' perceptions of the constraint posed by their access to and cost of finance. The 2009 Enterprise Surveys, for example, indicate that 39.1% of Moldovan firms believe that access to credit is a major constraint, the highest proportion in the region. In the median country, only 24.6% of firms cited access to credit as a major constraint, making

Moldova's firms 60% more likely to cite access to credit as a major constraint than those in the median country. The situation in Moldova appears to have worsened relative to that in other nations between 2005 and 2009. The regional median in 2005 was 16.5% (there are some differences in the ways the surveys were structured between these years, as well as the sample of countries[12]). In Moldova in 2005, 19.9% of firms cited this constraint, only 20% above the regional median. Given this divergence, it is not entirely surprising that BCG did not identify the cost of finance as a key constraint to economic growth.

Interestingly, there is no significant variation across firm size in the share of firms citing access to finance as a major constraint. That is, 38.9% of small firms (< 20 employees), 39.5% of medium firms (>20 and <100 employees) and 41.0% of large firms (>=100 employees) cite access to finance as a major obstacle. Even when looking at these firms' ratings of this obstacle across more disaggregated categories (whether the obstacle is a severe, major, moderate, minor, or nonexistent one), one sees relatively little variation in these responses across firms sizes. However, there is significant variation across firm size in terms of their probability of making recent investments in fixed assets, with 30% of small and medium firms and 45% of large firms having done so. Nonetheless, as discussed below, some of this difference can be explained by the greater availability of internal funding from larger firms' retained earnings.

Lack of access to and the relatively high costs of financial intermediation have limited the extent to which firms use certain types of external financing for investments. Enterprise Surveys find that 30.8% of Moldovan firms use banks to finance investment, the 5th lowest level in the region. Although the level of internal financing by firms is comparable to that in the median country in the region, a notably higher share of firms finance investment by raising new equity (12.2%, the 7th highest such total in the region).

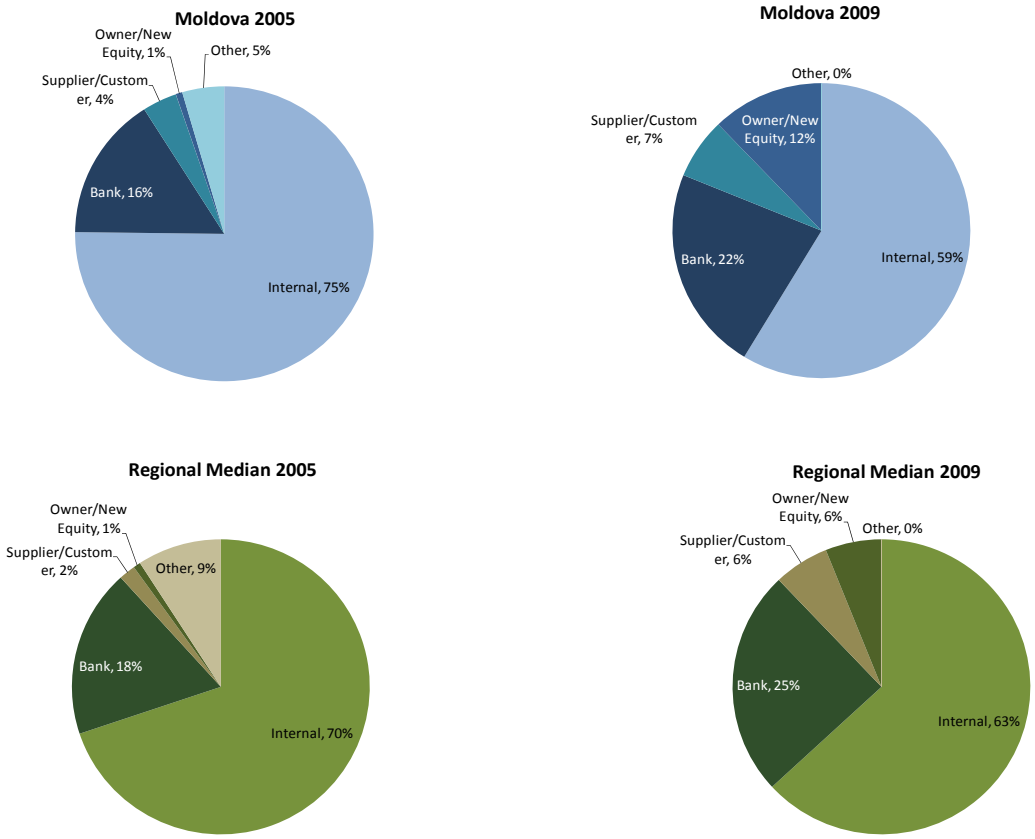
Chart 11. Share of Firms Using Banks to Finance Investments



Source: World Bank Enterprise Survey

[12] Six countries (Belarus, Georgia, Tajikistan, Turkey, Ukraine, and Uzbekistan) had surveys conducted in 2005 but not in 2009, while two countries had surveys in 2009 but not in 2005 (Kosovo and Montenegro). The median share of firms citing access to credit as a major constraint for the 21 countries with surveys in both years was 15.1% in 2005 and 25.9% in 2009.

Chart 12. Sources of Firm Financing for Investment, Moldova and Regional Median, 2005 and 2009



Source: World Bank Enterprise Survey
Note: Medians are normalized to sum to 100%

Not surprisingly, large firms are able to rely on internal funding from retained earnings to finance investments to a greater degree than medium or small firms (see Table 1). The latter, meanwhile, must finance their investment by raising new equity or eliciting new contributions from the firms' owners, and by borrowing from banks, their suppliers and customers, and from other sources (including relatives, friends and individual moneylenders). Notably, small and medium firms finance a significantly larger share of their investment in fixed assets by borrowing from private banks.

Combining these results on the composition of financing for investment with those on the probability and size of investment, we observe in Table 2 that larger firms do borrow more from private banks—although they use more financing of every type, including internal financing. In fact, the difference between larger and smaller firms' use of internal financing is greater than the difference in their use of private credit. The difference in credit use across firm size is also smaller than the difference in several other sources of credit. Together, these results suggest that many Moldovan firms—both large and small—face high finance costs and challenges in accessing credit.

Table 2: Probability and Conditional Value of Investment Financed by Firm Size and Financing Source

	Internal Funds		New Equity or Contrib.		Private Banks		State Banks		Suppliers/ customers		Other sources	
Dependent Variable	p(Inv. >0)	Inv. |Inv.>0	p(Inv. >0)	Inv. |Inv.>0	p(Inv. >0)	Inv. |Inv.>0	p(Inv. >0)	Inv. |Inv.>0	p(Inv. >0)	Inv. |Inv.>0	p(Inv. >0)	Inv. |Inv.>0
Unit	%	Mil MDL	%	Mil MDL	%	Mil MDL	%	Mil MDL	%	Mil MDL	%	Mil MDL
Coefficients on Dummies for												
Small (<=19)	27.37***	52.26***	7.301***	13.9***	10.56***	20.2***	0.568	1.084	3.922**	7.488**	2.662*	5.082*
	(4.35)	(6.11)	(2.59)	(4.71)	(2.56)	(4.60)	(0.40)	(0.77)	(1.68)	(3.10)	(1.38)	(2.61)
Medium (>=20 & <=99)	37.78***	55.54***	5.710***	8.39***	14.25***	20.9***	1.291	1.897	3.769**	5.540**	2.522*	3.708*
	(4.82)	(5.70)	(2.16)	(3.13)	(3.01)	(4.30)	(0.84)	(1.23)	(1.60)	(2.32)	(1.43)	(2.11)
Large (>=100)	47.12***	66.41***	6.728**	9.483**	12.74***	18.0***	0.201	0.283	2.718	3.831	1.445	2.036
	(5.16)	(5.46)	(2.73)	(3.78)	(2.98)	(3.99)	(0.20)	(0.28)	(1.70)	(2.37)	(1.07)	(1.51)
Observations	363	231	363	231	363	231	363	231	363	231	363	231

Results from survey sampling weight adjusted OLS regressions of the probability that a firm made any investment in fixed assets financed from each source on dummy variables for each category of firm size, as well as similar regressions of the value of the investment financed from each source for those firms with any positive investment. A constant term is omitted from the regressions for ease of interpretation. Standard errors are in parenthesis. *** p<0.01, ** p<0.05, * p<0.1.

Table 3: Value of Investment Financed by Firm Size and Financing Source

	Internal Funds	New Equity or Contrib.	Private Banks	State Banks	Suppliers/customers	Others
Dependent Variable	Investment (in Mil. MDL)	Investment (in Mil. MDL)	Investment (in Mil. MDL)	Investment (in Mil. MDL)	Investment (in Mil. MDL)	Investment (in Mil. MDL)
Coefficients on Dummies for						
Small (<=19)	7.005***	1.449**	36.16	0.368	0.483**	0.140**
	(2.21)	(0.67)	(29.33)	(0.31)	(0.21)	(0.07)
Medium (>=20 & <=99)	41.76**	32.64	18.11**	1.172	3.914	0.704*
	(18.28)	(29.62)	(7.96)	(1.08)	(2.83)	(0.40)
Large (>=100)	341.8**	136.8	167.9*	2.686	36.78	0.299
	(150.90)	(93.07)	(87.20)	(2.69)	(32.27)	(0.21)
Observations	363	363	363	363	363	363

Results from survey sampling weight adjusted OLS regressions of the value of the investment financed from each source for those firms with any positive investment. A constant term is omitted from the regressions for ease of interpretation. Standard errors are in parenthesis. *** p<0.01, ** p<0.05, * p<0.1.

At the same time, the legal environment for credit in Moldova is actually somewhat stronger than in many others in the region. The Doing Business "Strength of Legal Rights Index", which ranges from 0 (weak) to 10 (strong) has rated Moldova as an 8 in each of the survey waves to date, compared to the median score of 7 in the region. The Index incorporates the legal ability of borrowers to use various forms of property as collateral, as well as the priority and legal protections afforded secured creditors in the event of bankruptcy or reorganization. Moldova's score on the Index has remained constant since its inception in 2005, reflecting a relatively stable legal environment for both borrowers and creditors.

One non-price feature limiting access to credit in Moldova is the lack of a credit information sharing bureau, which exists in some form—be it public or private—in every other Eastern European and Central Asian country except Cyprus and Tajikistan. The Doing Business surveys indicate that bureaus now cover more than 20% of the population in the median country in the region, and four countries have at least 50% of their populations covered by at least one bureau. Even without a formal information-sharing mechanism, banks have been able to reduce the share of non-performing loans substantially, with this share dropping from more than 20% in 2000 to less than 4% in 2007 (see graph below). Nonetheless, as banks have extended an increasing volume of loans (reducing the share of mature, non-performing loans) and focused on their own internal information systems, further gains in this direction may become more costly than gains made through information sharing. Thus, although financial intermediation costs for banks have dropped consistently in Moldova over the past decade, further gains may increasingly depend on a greater degree of information sharing by banks and other financial institutions.

Despite the high price and non-price constraints on credit for Moldovan firms, the volume of domestic credit provided to the private sector as a share of GDP has actually grown substantially in the past decade. In the early 1990s, such credit amounted to less than 5% of GDP (WDI data). By 2005, it had grown to 23.6%, and by 2008, it reached 36.5%. This rapid rise may be correlated with substantial growth in capital investment in the last decade (see graph below).

Chart 13. Credit and Investment, Moldova, 1991 - 2008

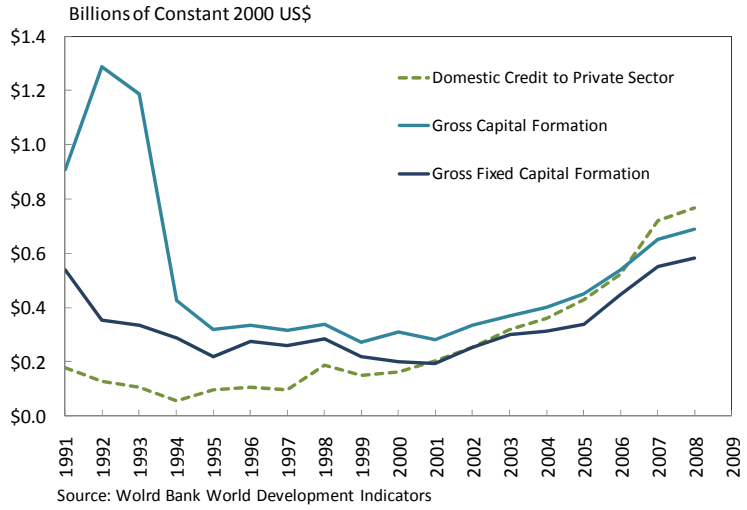
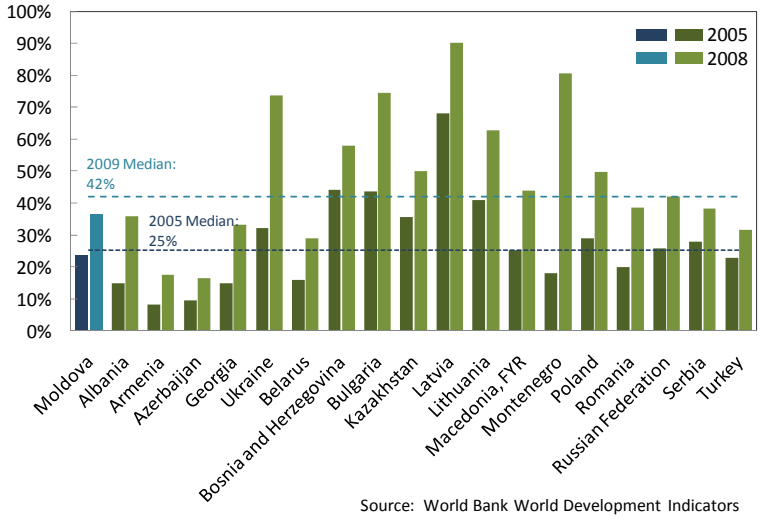


Chart 14. Domestic Credit to Private Sector, As a % of GDP, By Country



Although domestic creditors still provide a smaller volume of lending to the Moldovan private sector than do those in most other countries in the region (in 2008, Moldova ranked 13th out of 23 countries with data in the region) and the financial crisis has taken a toll on lending in Moldova, the continued expansion of credit is likely to continue in the mid to longer term (WDI data). The growth in domestic credit to the private sector in Moldova has been very close to that in the median country, with Moldova's growth rate ranking 12th in the region. This suggests that, despite the relatively rapid growth, substantial gains can yet be made in providing lower cost credit to the private sector.

4. Prioritizing Across Major Nodes

Moldova's challenge is a multi-faceted one. Private investment is inhibited by large costs to transport goods, and investment in agricultural development is limited by the relatively inefficient delivery of scarce water resources. Even if these costs were reduced and the net returns from economic activities expanded, the ability of private agents to appropriate those returns would still be hampered by corruption and by relatively costly processes to start and close businesses, adjust employment levels, and protect shareholders against abuse by corporate directors. Moreover, macroeconomic shocks also represent important risks to the real returns appropriable by private investors, particularly in the aftermath of the economic crisis. Finally, the net private profitability of investment is reduced by the relatively high cost of finance, including both price and non-price costs.

Which of these nodes of the HRV tree is the most binding, and should be the priority for Moldovan policymakers? As previously mentioned, MCC's Constraints Analysis process eschews this focus on a single priority, largely because the MCC's funding model allows engagement on several contemporaneous priorities. Nonetheless, it is useful to assess to what extent the analysis on each major node can be aggregated across these nodes.

There are a number of initiatives aimed at comparing major obstacles facing countries' growth and development processes, including the World Economic Forum's Global Competitiveness Reports. Other data sources offer both broad thematic and country coverage—including the World Bank's Country Performance and Institutional Assessments (CPIA)—and can be used to assess those major areas in which a given country is particularly lagging. These various datasets are conducted for very different purposes, and thus do not cover all the relevant issues, use different benchmarks, and draw on different data sources. To some extent, these differences are true even of the data used to compare lower-level nodes. However, when considering whether deteriorating roads are more binding than weak institutions, one has little comparable evidence on the marginal effects of these elements on investment or growth.

The CPIA ratings conducted by World Bank staff cover 20 key issue areas for every country receiving International Development Association (IDA) funding (those in the Bank's "Low Income" and "Lower Middle Income" categories). A country's performance on each CPIA indicator is scored on a scale of 1 (low) to 6 (high). The challenge with such a metric is that it can detect gross variation quite well (say, between that of Georgia and that of Zimbabwe), but does poorly in looking at finer levels of variation—particularly those that typically exist across issues within a country. Thus, for 17 out of the 20 issues, Moldova received a score between 3.5 and 4 (inclusive) in 2008. The one issue on which Moldova receives a score below this cluster is "transparency, accountability, and corruption in the public sector," an area in which it scored a 3. Moreover, most of the variation among themes for Moldova is closely correlated with the variation in many other nations in the region (the correlation between Moldova's scores and the regional median among the IDA-eligible countries in the region across the 20 indicators is 0.85). The only indicator for which Moldova's rating is notably below the median is the "business regulatory environment," for which Moldova receives a score of 3.5 while the median is 4. Given the focus of the CPIA on the country's policy and institutional environment, however, it does not include

features of the economy such as infrastructure conditions or water resources available for agriculture. Thus, it can help confirm our findings that key elements of Moldova's legal and administrative environment for businesses may indeed pose important constraints to growth, but it cannot help prioritize between these constraints and those represented by the country's deteriorating roads and its water shortages.

The World Economic Forum's (WEF's) Global Competitiveness Index, described in detail in its *2008-2009 Global Competitiveness Report*, offers somewhat broader thematic overage. The index is based on a combination of national data from many of the sources cited herein and WEF-sponsored surveys of business leaders in each country. Out of the 134 countries rated in 2008-2009, Moldova ranked 95th on the overall competitiveness index. Among the 10 core "pillars" considered as the most crucial for countries at Moldova's level of development, Moldova received the lowest global ranking in terms of its market size (114), infrastructure (113), goods market efficiency (105), and financial market sophistication (104)[13]. The next worst ranking is at least 9 spots better than any of these, making these issues the most likely candidates for the most binding constraints in Moldova.

The market size ranking is neither surprising nor very helpful for policymakers. The underlying measure is constructed by summing GDP per capita in current PPP$ and the net trade balance, so a lower middle income country with a small population will almost certainly rank relatively low on this measure. Moreover, as Krugman (1991) highlights, the size of a country's market is an endogenous outcome of the factors and endowments available to it. In terms of its infrastructure, Moldova ranked 133rd in terms of the quality of its roads (ahead of only Mongolia), much worse than the ratings of its telecommunications (56th) and energy infrastructure (79th). The relative inefficiency of its good markets includes issues related the regulatory, legal, and administrative environment, including the weakness of its anti-monopoly policies (ranked 123rd) and its distortionary agricultural policies (116). Finally, the relatively low sophistication of Moldova's financial markets extends to the difficulty of financing via loans (102), the local equity market (110), and venture capital (120).

Comparing between the main pillars remains challenging even with data on each. Is an 8 to 9 position difference between the country's ranking in terms of its infrastructure (113th) and its goods market efficiency (105th) or financial market sophistication (104th) the result of meaningful differences or measurement error? There is little statistical evidence on which to base this statement: Since the underlying rankings are distributed almost entirely along a uniform distribution ranging between 1 and 134, their standard deviation would be approximately 38. Differences between rankings would be almost impossible to detect with statistical confidence unless they were so dramatic as to be obvious even without statistical basis (say, a ranking of 24 on one pillar and 100 on another). Nonetheless, even without statistically meaningful evidence, we can argue that these findings are largely consistent with those of our separate analyses of the low social returns, low appropriability, and high costs of finance

[13] Not surprisingly, Moldova scored even lower on the two additional pillars that the WEF identifies as key for countries at higher levels of development: business sophistication (131) and innovation (116). Moreover, these scores are almost entirely based on subjective surveys of WEF-chosen business leaders. The only directly observed indicator used to construct these measures is the number of patents issued to utilities; there were none in 47 countries in 2007, including Moldova.

branches of the HRV tree. Moreover, they also offer suggestive evidence that the deterioration of Moldova's roads may be the single most binding constraint to the country's economic growth.

5. Conclusions

Policymakers and donors focused on generating economic growth by spurring private investment in developing countries have at their disposal new support for prioritizing attention on the most important constraints to this investment. These constraints can take various forms, including scarcities in complementary assets like natural, human, and man-made capital, as well as the efficiency of production technologies using this capital. Scarcities in one form of asset can lead to relatively low returns for investment in other assets if these assets are complementary. The constraints can also take the form of weak prospects for individuals to appropriate the returns from these investments, caused both by idiosyncratic and systemic risks. Finally, the profitability of pursuing a specific investment depends on the opportunity cost of devoting resources to this investment rather than another. When a firm is constrained in its ability to finance this investment internally, these opportunity costs reflect economy-wide opportunities, as well as the costs of intermediating between these opportunities. When these intermediation costs are high or when individuals prefer to devote their income to consumption rather than longer term savings, the profitability of private investment financed externally is relatively low.

Of course, nearly all of these constraints are endogenous, reflecting both the pattern of development to date and the degree to which a society has organized its institutions to effectively address these constraints. Moldova, a country still transitioning from Soviet-era institutions to a market-based economy, has faced challenges in the way it delivers and manages water resources for agriculture, as well as in the institutions allocating funding for road maintenance. It is difficult to imagine that the deteriorating quality of the country's roads and the relatively limited and inefficient use of water resources in agriculture were not well known or recognized as important challenges in Moldova even without a growth diagnostic. Moreover, allocating funding for new capital investments in roads and irrigation without a commitment to reform the institutions that allowed these conditions to arise in the first place would offer a temporary fix that would not be likely to alter the country's long-term growth trajectory (it would cause a temporary rise in the level of economic production but the growth rate would eventually revert to the long-run mean once these investments deteriorated). Using growth diagnostics to not only focus on the most crucial constraints but also build commitment by a developing country's government to enact institutional reforms remains a key challenge. The engagement between MCC and the Moldovan government offers one useful model for building support for these reforms.

At the same time, the MCC example also highlights the challenges of donor engagement in the current fragmented aid environment. With MCC offering large amounts of new grant funding, it is perhaps not surprising that MCC's Compact with Moldova tackled those constraints that involved the largest physical capital investments rather than those that entailed more technical knowledge and political capital, such as changes in the legal context and administrative requirements for firms. Other donors, including the US Agency for International Development (USAID) and the World Bank have ongoing programs aimed at

reforming the business environment and financial sector in the country. Coordinating such diverse initiatives and forms of support—each of which entails its own focus, time frame, predictability of funding, and conditions—remains a major challenge for developing country governments. Moreover, one of the reasons Moldova was selected as a partner for MCC is exactly because it enjoys a more effective public sector than most other countries at its relative level of development (when Moldova was selected as a candidate for MCC funding in 2006, its score on the World Bank Institute's Government Effectiveness index was at the 60th percentile among low income countries (MCC 2006)). Implementing the results of a growth diagnostic that highlights a set of important reforms in a country with weaker public sector capacity using fragmented sources of donor support may be major challenge.

Finally, even with strong capacity to implement new institutional arrangements that maintain the important investments being made to address key constraints, developing countries must still summon the political capital and will to enact these specific reforms. Countries in transition, such as Moldova, must do so in the midst of broader changes in ownership structure as they move from large corporate operations in agriculture and other sectors toward private and often more dispersed ownership. As such, future growth diagnostic exercises may find it valuable to explicitly consider the political economy associated with endogenous constraints.

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