



# REPUBLIC OF KAZAKHSTAN

## SELECTED ISSUES

September 2018

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# REPUBLIC OF KAZAKHSTAN

## SELECTED ISSUES

August 28, 2018

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## FISCAL RISK MANAGEMENT<sup>1</sup>

*Kazakhstan faces fiscal risk from diverse sources, including volatility of oil prices, financial sector exposure, state-owned enterprise (SOE) risks, and other macroeconomic and specific shocks. Historically, these shocks, especially sudden declines in oil prices, have had a significant impact on the economy and public finances. Addressing these risks through enhanced monitoring and management would bring considerable benefits.*

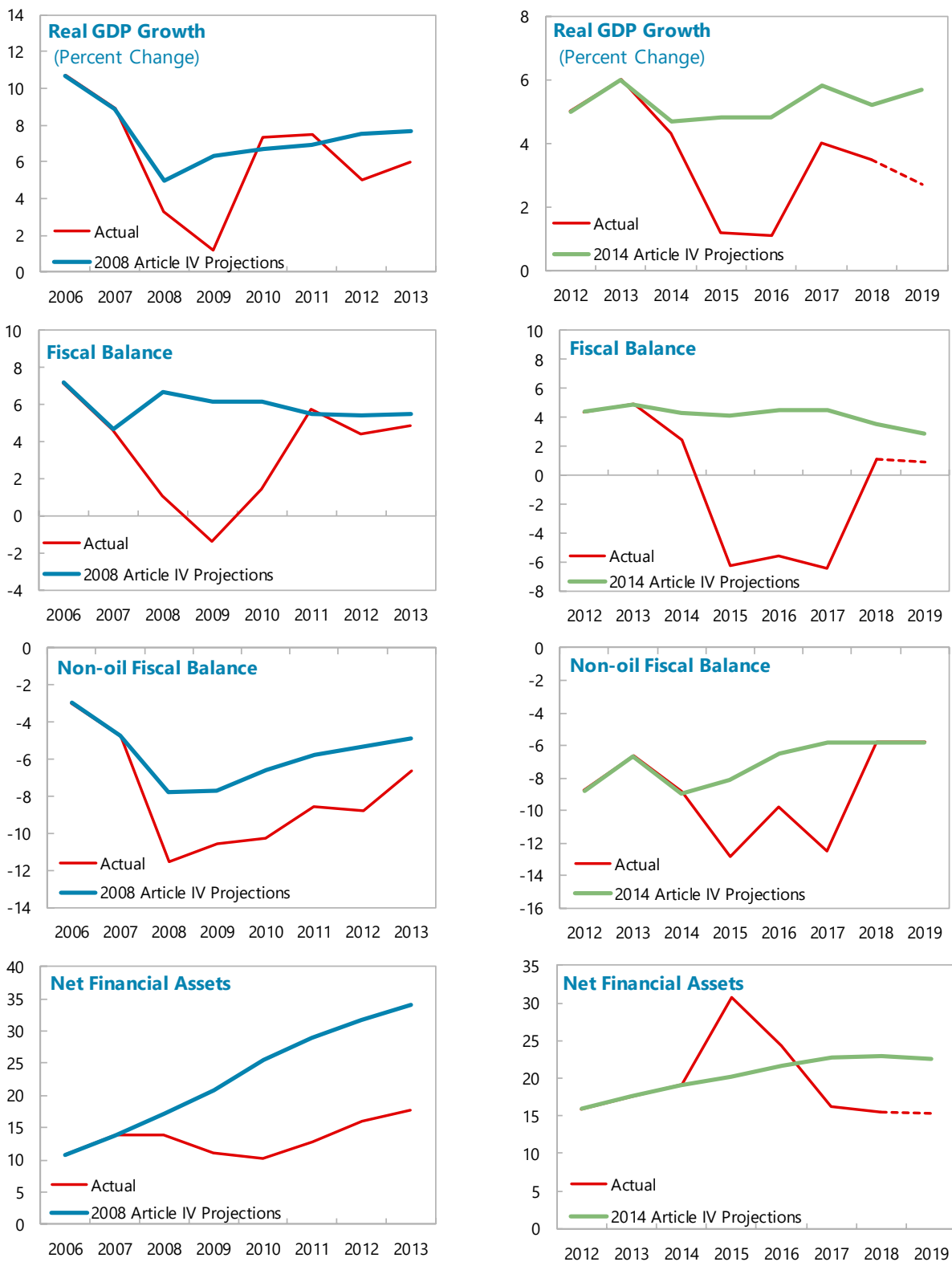
1. **Analyzing and managing fiscal risks is a key aspect of fiscal policy, especially in oil-producing countries that are subject to revenue volatility.** Fiscal risks are factors that may contribute to significant deviations in fiscal outcomes, compared to what was expected in forecasts or budgets (IMF 2016). Sources of risk include macro shocks (e.g., oil price, ER, or external demand shocks) or contingent liabilities, either explicit (e.g., guarantees) or implicit (e.g., bail-out of banks or SOEs). Country experience suggests that failure to assess and manage such risks may result in higher obligations and public debt, and occasionally, crises.
2. **Comprehensive analysis, management and disclosure of fiscal risks helps the credibility and sustainability of public finances and supports macro stability.** Risk management practices are often incomplete, fragmented, and lacking quantitative analysis. This may result in an incomplete assessment of risks with adverse impacts on activity and public finances. A more comprehensive and integrated assessment of the potential effects of shocks on public finances, in the form of fiscal analysis and stress tests, helps strengthen central forecasts and understand implications for government liquidity, financing needs, and solvency (IMF 2016). Disclosing analysis of fiscal risks may help increase credibility and accountability (IMF 2009).
3. **Kazakhstan is subject to several fiscal risks.** Over the last two decades, Kazakhstan experienced oil price, ER, and external demand shocks, as well as specific risks stemming from the financial sector, SOEs, and other contingent liabilities. Some of these had a significant impact on public finances. The oil price shocks of 2008-09 and 2014-15 led to a large decline in revenues and exports (Figure 1) and were followed by costly bailouts of highly dollarized banks in 2009 and 2016 and a large transfer to KazMunaiGas in 2015 to ensure timely debt service payments by the company. The oil price shocks in 2008-09 and 2014-15 led to a decline of nominal GDP by nearly two standard deviations relative to the average; best practice identifies a macro shock when nominal GDP falls by *one* standard deviation (IMF 2016). Risks of future shocks call for a comprehensive approach to fiscal risks management.

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<sup>1</sup> Prepared by Matteo Ghilardi.

**Figure 1. Kazakhstan: 2008 and 2014 Forecasts vs. Current Estimates**

(Percent of GDP, unless otherwise specified)



Source: Kazakhstani authorities and IMF staff estimates.

4. **Kazakhstan should continue to put in place international best practice in fiscal risk management, following a four-step process:**

- *Step 1: Identifying and Quantifying Risks.* Countries with advanced fiscal risk practices usually follow advanced practices identifying, assessing, disclosing risks (see Table 1). Disclosure creates a feedback loop that strengthens identification and assessment. *Quantified* assessments of fiscal risks are a common feature of advanced practices.
- *Step 2: Risk Mitigation.* Advanced practice in mitigating a specific fiscal risk depends on its nature. Risks may be categorized according to whether they are endogenous—generated by government activities or influenced by government action—or exogenous, continuous or regular, or discrete.
- *Step 3: Provisioning.* Risks that cannot be mitigated efficiently may be addressed via provisioning. There are three broad types of provisioning: expensing costs up-front in the budget; creating budget contingencies; or establishing buffer funds.
- *Step 4: Accommodation.* Remote, discrete fiscal risks are generally accommodated by maintaining sufficient fiscal space should shocks arise and risks materialize.

5. **Institutional arrangements are also important for effective fiscal risk management.**

These include:

- *A formal risk management policy.* Governments and ministries of finance (MoFs) under delegated authority from their governments define clearly the conditions under which fiscal risks may be assumed by the government and ministries;
- *Clear responsibilities.* Individual ministries are responsible for identifying, estimating, analyzing, and monitoring specific risks that fall within their functions. This is consistent with the principle that specialists are more likely to have the required capacity to monitor and manage specific risks within their area. However, there are some areas, such as oversight of SOEs or PPPs, where oversight is centralized at the MoF to yield economies of scale;
- *A central risk oversight body.* Even where risks are recorded and managed at the ministry or agency level, monitoring and management of overall fiscal risk are centralized at the MoF. This allows for an assessment of aggregate risk exposures across government and for the identification of any systematic relationships or interactions between risks. It also facilitates examination as to whether risks emanating from various sources are offsetting. This role is often assigned to a specific unit or high-level committee, with a mandate to monitor how risks are evolving; establish risk-warning indicators; and undertake ‘war-gaming’ exercises to prepare for risks. The unit is tasked with assessing whether risk mitigation practices are adequate and recommending actions to strengthen them where required; and

**Table 1. Kazakhstan: Advanced Practices in Risk Management**

<b>Risk Category</b>	<b>Advanced Practice</b>
<b>Macroeconomic Risks</b>	Budget documentation includes sensitivity analysis, alternative scenarios, and probabilistic forecasts of fiscal outcomes.
<b>Specific Fiscal Risks</b>	The main specific risks to the fiscal forecast are disclosed in a summary report, along with estimates of their magnitude and, where practicable, their likelihood.
<b>Long-Term Fiscal Sustainability Analysis</b>	The government regularly publishes multiple scenarios for the sustainability of the main fiscal aggregates and any health and social security funds over at least the next 30 years using a range of macroeconomic, demographic, natural resource, or other assumptions.
<b>Budgetary Contingencies</b>	The budget includes an allocation for contingencies with transparent access criteria and regular in-year reporting on its utilization.
<b>Asset and liability Management</b>	All liabilities and significant asset acquisitions or disposals are authorized by law, and the risks surrounding the balance sheet are disclosed and managed according to a published strategy.
<b>Guarantees</b>	All government guarantees, their beneficiaries, the gross exposure created by them, and their probability of being called are published at least annually. The maximum value of new guarantees or their stock is authorized by law.
<b>Public-Private Partnerships</b>	The government at least annually publishes its total rights, obligations, and other exposures under public-private partnership contracts and the expected annual receipts and payments over the life of the contracts. A legal limit is also placed on accumulated obligations.
<b>Financial Sector Exposure</b>	The authorities quantify and disclose their explicit support to the financial sector at least annually, and regularly undertake an assessment of financial sector stability, based on a plausible range of macroeconomic and financial market scenarios.
<b>Natural Resources</b>	The government publishes annual estimates of the volume and value of major natural resource assets under different price and extraction scenarios, as well as the volume and value of the previous year's sales and fiscal revenue.
<b>Environmental Risks</b>	The government identifies and discusses the main fiscal risks from natural disasters, quantifying them on the basis of historical experiences, and managing them according to a published strategy.
<b>Sub-national Governments</b>	The financial condition and performance of sub-national governments is published quarterly, and there is a limit on their liabilities or borrowing.
<b>Public Corporations</b>	All direct and indirect support between the government and public corporations is disclosed and based on a published ownership policy. A report on the overall financial performance of the public corporations' sector, including estimates of any quasi-fiscal activities undertaken, is published on at least an annual basis.

- *Central controls over major risks.* The authority to approve contracts that expose the government to fiscal risks is vested in a central authorizing entity, usually the MoF or a cabinet committee. This is particularly important where policymakers have taken decisions to cap exposure to particular risks. The decision to take on risk is assessed as part of the budget process. Specific risk instruments (such as guarantees) are benchmarked against traditional policy instruments and accounted for in agency budgets.

6. **Kazakhstan has tools to mitigate some risks, but there is not a comprehensive framework to analyze and manage all fiscal risks.** Existing risk-mitigation tools include: (i) ceilings for borrowing and limits on transfers from the NFRK; (ii) a budget reserve to finance expenditures that were not planned when national and local budgets were prepared; and (iii) annual limits on state guarantees set in the budget. Useful information for identifying and managing fiscal risks is also being produced, reflecting recent changes in the regulatory and control framework, but the information could be analyzed and reported in a systematic way (IMF 2014). More specifically, the Ministry of National Economy (MNE) produces a scenario-based forecast; however, there is not a systematic analysis of forecasts errors for macroeconomic assumption or fiscal forecasts. The MNE disseminates medium-term ceiling to ministries to constrain the budget within certain targets; however outer-year ceilings are mostly indicative. Line ministries are required to provide a performance-based submission, including a statement of risks; however, due to capacity constraints, there is no quantified risk information. Finally, the MoF elaborates and manages centralized accounting, financial and fiscal reporting for monitoring operational performance. However, this information is not analyzed from a risk perspective and summarized into a statement of fiscal risks.

7. **The analysis of fiscal risks should be presented in a single report or statement.** This could be produced by a newly-established “fiscal risks unit,” housed either at the MoF or the MNE, in collaboration with the other ministry, line ministries and agencies, the NBK, and SOEs. The statement should be part of the budget document submitted to parliament to inform fiscal policy decisions and published, taking into consideration sensitive information and/or moral hazard concerns. Content should follow international best practice (e.g. IMF 2009 and 2014 and Table 1) and evolve through time following the risks faced by Kazakhstan. Each section should provide a quantitative macro-fiscal sensitivity and a scenario analysis, ideally with a balance-sheet analysis.

8. **Enhancing monitoring, management and reporting of fiscal risks would bring considerable benefits.** Best practice recommends an integrated approach to fiscal risks. A deep analysis and full disclosure following a comprehensive, integrated approach with the aim of producing a detailed fiscal risk statement in line with international best practice should be a key objective for Kazakhstan. This would help both credibility—and borrowing costs—and fiscal and macro outcomes. The IMF stands ready to provide technical support in several areas:

- *Fiscal Risk Management and Stress Testing.* This would help identify potential sources of risk, including macro shocks, and specific risks from government guarantees, PPPs, the financial sector, and elsewhere. Having identified the main potential sources of risk, it would help quantify these risks, and examine arrangements in place to monitor, manage, mitigate, and report the risks identified.



- *Fiscal Transparency Evaluation.* This is the IMF's principal diagnostic tool that provides countries with: (i) an assessment of their practices against standards set out in the Fiscal Transparency Code; (ii) an analysis of the scale and sources of fiscal vulnerability based on a set of transparency indicators; (iii) an account of fiscal transparency strengths, weaknesses and reform priorities; and (iv) an action plan to help address those reform priorities.
- *Fiscal Oversight of SOEs.* This focuses on risks stemming from SOEs including the allocation of institutional responsibilities for oversight, ongoing monitoring of the SOE performance and their fiscal impact, identification and management of public service or quasi-fiscal activities and reporting on the performance of the SOE sector as a whole.

## References

IMF, 2009, Fiscal Risks. Sources, Disclosure, and Management.

IMF, 2014, The Republic of Kazakhstan. Selected Issues in Financial Reporting, Accrual Budgeting, Audit, and Fiscal Risk Management.

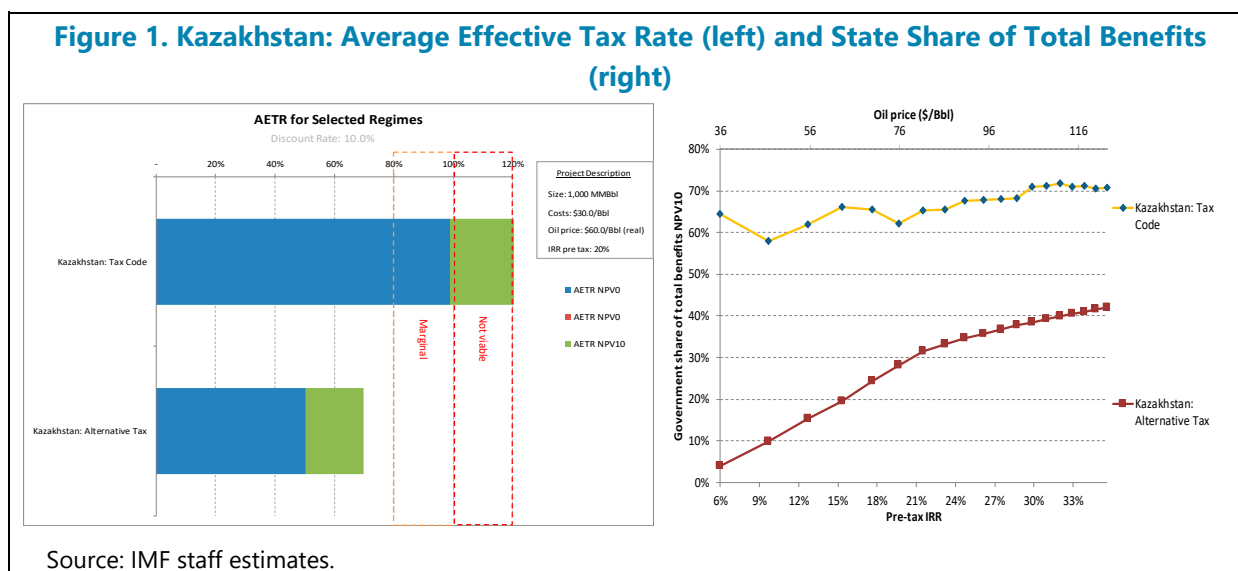
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# KEY ELEMENTS OF THE NEW REGIME OF NATURAL RESOURCE TAXATION<sup>1</sup>

The Kazakhstani authorities have made revisions to the fiscal regime for the extractive industries, with the goal of encouraging exploration and incentivizing investment. In the petroleum sector, the main changes have been the introduction of an optional alternative tax on profits, eliminating the commercial discovery bonus and more favorable treatment of exploration expenses. In the mining sector, the removal of the excess profits tax has been accompanied by an increased reliance on production-based instruments. A comprehensive review of the mining sector taxation should be considered, with a view of revisiting the balance of incentives for exploration and production and additional revenues. Improvements in the regulatory and investment environment, as well as greater transparency would help increase the attractiveness of investment in the natural resource sector.

1. **Changes have been made to the fiscal regime for the oil sector.** Oil production and revenues are dominated by three “super-giant” fields—Karachaganak, Tengiz, and Kashagan, which commenced production in 2017. These fields are governed by project-specific contracts and confidential fiscal terms, which makes it difficult to assess expected revenues and associated fiscal risks. The authorities made revisions last year to the general fiscal regime affecting other oil and mining projects, with the goal of encouraging exploration. In oil, with mature fields now facing declining output, the authorities see the need to attract investment in new deep-water areas. The main change has been introduction of an optional “alternative” tax on profits (with a sliding rate scale varying with price), replacing sector specific production and profit-based instruments under the standard regime. Below US\$50/bbl, the alternative tax rate is zero. Revisions also eliminated a commercial discovery bonus and introduced more favorable treatment of exploration expenses for existing taxpayers.



<sup>1</sup> Prepared by Alpa Shah.

2. **With multiple, production-based instruments, the standard regime is regressive and may deter investment in marginal projects.** These regressive instruments include the mineral extraction tax, the customs export duty and the export rent tax, all levied on production value, with the rate varying either by price or production level. In contrast, by relying on profit-based instruments, the alternative regime lowers the overall burden and improves progressivity. Figure 1.1 shows a simulation of the two regimes.<sup>2</sup> It is unclear what size of offshore deep-water prospects are expected, and therefore what scale of discovery should be assumed. For illustrative purposes, the analysis considers a stylized oil field of 1 billion barrels—large but still modest relative to the super giant fields, with a unit cost of approximately US\$30/bbl—in line, but potentially at the lower end of what might be anticipated in these waters.<sup>3</sup> At an assumed an US\$60/bbl price level, and pre-tax return of 18.3 percent, the standard regime places a higher overall fiscal burden on the project, with a discounted average effective tax rate (AETR) of over 100 percent, while the AETR under the alternative regime is around 70 percent. Using a “breakeven price” approach (to meet a hurdle investment post-tax real rate of 12.5 percent), the standard regime yields a breakeven price of over US\$120/bbl (driven by the customs duty and export rent tax which increase with price), while the alternative regime’s breakeven price is US\$56.5/bbl. Of course, a consequence of reliance on profit-based instruments is a shift of revenue risk to the government. Figure 1.2 estimates the state share of total benefits<sup>4</sup> over a range of project results to show that the alternative regime is more progressive, meaning that the government receives a rising share of project cash flows as profitability increases, but also bears more of the downside for less profitable projects.

3. **Further improvements in the overall environment and greater transparency are needed.** While the fiscal regime amendments may improve the attractiveness of investment prospects offshore, additional improvements in the overall investment and regulatory environment are needed to secure new investment into the sector. Also, in line with international norms and good transparency practices, the authorities and oil companies are encouraged to disclose all contractually agreed fiscal terms, particularly for the “super-giant” fields to allow for clear public understanding of fiscal benefits.

4. **For mining, tax code adjustments appear to have moved in the opposite direction,** reflecting removal of an excess profits tax (EPT). The authorities noted that aside from coal producers, very few companies were paying the EPT, largely due to tax planning and avoidance. Several companies have refining operations or operate in non-resource sectors, creating possibilities for transfer pricing, especially if clear ringfencing rules are not in place. This suggests a need for careful review of ringfencing and transfer pricing rules to support profit-based instruments. To compensate for the loss of EPT from coal producers, the export rent tax was increased from 2.1 to 4.7 percent, implying greater reliance on production-based instruments. The authorities should consider a comprehensive review of mining sector taxation to balance incentivizing investment and realizing an appropriate share of revenue.

<sup>2</sup> A 10 percent carried state participation by KazMunaiGaz is assumed in each case, along with withholding taxes payable on dividends and interest.

<sup>3</sup> See KazEnergy 2017 National Energy Report, p.28 for a cost curve for new projects worldwide.

<sup>4</sup> Total benefits are revenue minus operating costs and replacement capital investment.

## USING INTEREST RATE RULES TO INFORM MONETARY POLICY<sup>1</sup>

*Interest-rate rules can be a valuable addition to monetary policy decision-making. The National Bank of Kazakhstan (NBK) uses an interest rate rule in the context of its quarterly projections model. This rule is complex and may be difficult to interpret or communicate. Projections based on simpler rules could be considered as well, including a classical Taylor rule and its variations and optimal and robust rules derived from estimated small-scale models.*

1. **Interest rate rules can provide useful guidance to monetary policy.** Modern central banks look at a wide range of indicators when deliberating on policy adjustments, including interest rate rules. For example, the U.S. Federal Reserve staff present the outcomes for the federal funds rate from several rules to the FOMC on a regular basis.<sup>2</sup> Other central banks give consideration to interest-rule recommendations in their models or as a cross check (Asso and others, 2010). In addition to providing guidance and serving as a benchmark for the monetary policy stance, interest-rate rules can be a useful communication tool. In countries where central banks do not enjoy full independence, they can also be used to address pressures to deviate from the core mandate of maintaining price stability. At the same time, interest-rate rules have limitations and should not be followed mechanically.<sup>3</sup>
2. **The NBK uses a complex interest-rate rule as part of its quarterly projection model (QPM).** The initial version of the model was developed when the NBK was still applying a fixed ER regime. Accordingly, the interest-rate rule was a combination of world interest rate (approximated by the US Federal funds rate) and a premium for Kazakhstan which was a function of the terms of trade and the trade balance (Chernyavskii and Mukanov, 2017). With the transition to inflation targeting, a new rule was adopted. This is a complex rule that is essentially a weighted average of two rules—one based on the balance of payments outcome and second that depends on the lagged value of the policy rate, the equilibrium real rate, the deviation of inflation from its target, and the output gap.
3. **Simpler rules could be considered to provide additional insights.** Besides estimates based on the QPM rule, there may be merit in looking at simpler Taylor-type rules, involving a few key variables. Such rules may be more tractable and easy to communicate; they can be specified either on an *ad hoc* basis, drawing from the literature or the experiences of other countries, or derived from small-scale models, for example, a two-equation model

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<sup>1</sup> Prepared by Rossen Rozenov.

<sup>2</sup> See, for example, the Report on Economic Conditions and Monetary Policy, available at <https://www.federalreserve.gov/monetarypolicy/files/FOMC20111213tealbookb20111208.pdf>

<sup>3</sup> Issues arising in relation to strictly rule-based monetary policy are discussed by Walsh (2017).

comprising an output gap equation and an inflation equation (and lags). Similar models have been used by Laubach and Williams (2003) and Rudebusch and Svensson (1999).<sup>4</sup>

4. **A basic model of inflation and output gap dynamics was estimated for Kazakhstan.** Regressions use quarterly data for 1Q 2003–4Q 2017. Inflation is defined as the log difference over 4 quarters minus the inflation target—set at 6 percent (the middle of the NBK target band), and the output gap is the log difference of actual and potential GDP, extracted from an HP-filter. The subtraction of the target from actual inflation is for technical reasons; with this transformation, the objective is to stabilize the economy at the origin, implying zero-output gap and zero-deviation of inflation from the target. Accordingly, the real interest rate is adjusted for the equilibrium real rate, assumed to be equal to 4 percent.<sup>5</sup> OLS estimates are presented in Table 1.<sup>6</sup> Most of the estimates are statistically significant at the conventional levels, with the important exception of the coefficient on the output gap in the inflation equation; the fit is overall good.

**Table 1. Kazakhstan: Model Parameter Estimates**

#### A. Inflation Equation

Dependent Variable: GAP  
Method: Least Squares  
Date: 06/05/18 Time: 17:42  
Sample: 2003Q1 2017Q4  
Included observations: 60

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GAP(-1)	0.823801	0.070914	11.61696	0.0000
RR(-1)	-0.245767	0.084206	-2.918650	0.0051
RR(-2)	0.234006	0.083058	2.817397	0.0067
D1	-1.966674	1.102312	-1.784135	0.0799
D2	-3.752638	1.106202	-3.392364	0.0013
R-squared	0.752174	Mean dependent var	-0.061715	
Adjusted R-squared	0.734151	S.D. dependent var	2.021814	
S.E. of regression	1.042459	Akaike info criterion	3.000697	
Sum squared resid	59.76963	Schwarz criterion	3.175226	
Log likelihood	-85.02091	Hannan-Quinn criter.	3.068965	
Durbin-Watson stat	1.995551			

#### B. Output Gap Equation

Dependent Variable: P  
Method: Least Squares  
Date: 06/05/18 Time: 17:42  
Sample: 2003Q1 2017Q4  
Included observations: 60

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GAP(-1)	0.017046	0.055494	0.307159	0.7599
P(-1)	1.261463	0.055060	22.91066	0.0000
P(-2)	-0.280772	0.054406	-5.160682	0.0000
D1	6.330033	0.843480	7.504662	0.0000
D2	-6.620265	0.886622	-7.466840	0.0000
D3	7.365914	0.801909	9.185478	0.0000
D4	-6.799233	0.864699	-7.863122	0.0000
R-squared	0.949228	Mean dependent var	2.050615	
Adjusted R-squared	0.943480	S.D. dependent var	3.362691	
S.E. of regression	0.799445	Akaike info criterion	2.499483	
Sum squared resid	33.87295	Schwarz criterion	2.743823	
Log likelihood	-67.98448	Hannan-Quinn criter.	2.595057	
Durbin-Watson stat	2.055937			

Source: IMF staff calculations

Notation: GAP = output gap; P = annual inflation minus target; RR = real interest rate minus equilibrium real rate; D1, D2, D3, D4 = dummy variables corresponding to specific events, associated with large shocks to output and inflation.

<sup>4</sup> In principle, other relevant variables and equations could be added to the model. For example, for Kazakhstan, oil prices and the ER are potential candidates. Since oil prices are exogenous, they can be thought of as shocks that affect output and inflation in the context of the basic model. The ER could in principle be made part of the model, but experiments suggested little gain relative to the increased complexity of the resulting rule. Furthermore, a strict inflation targeter would react to the ER only to the extent that it affects expected inflation.

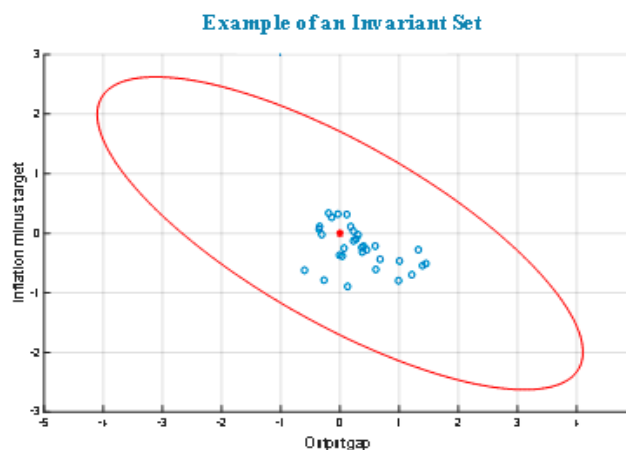
<sup>5</sup> According to the NBK's 2018 Monetary Policy Guideline, "[t]he base rate in the real terms, i.e., the nominal rate minus the forecasted inflation over a 12-month horizon, will be maintained at the level not exceeding 4 percent." The NBK has recently lowered its estimate of the real equilibrium rate.

<sup>6</sup> Unit root tests were overall inconclusive, with p values around 0.06–0.07 in the case of the Phillips-Perron test; the KPSS test did not reject the null of stationarity.

5. **The estimates can be used to obtain an optimal interest rate rule.** Such a rule can be derived as a solution to a suitable optimal control problem, whereby a quadratic loss function is minimized subject to the estimated relationships. The resulting rule takes the form of a linear relationship between the policy variable (the interest rate) and the state of the economy, represented by inflation and the output gap. Assigning equal weights on inflation, output gap, and interest rate volatility in the loss function, the following rule obtains:

$$rr_o = 0.07gap + 0.053p - 0.015p_{-1} + 0.020rr_{-1} .$$

6. **An alternative is to design a rule that is robust to uncertainty; ideally, both additive and parametric.** While most of the estimated coefficients have relatively tight confidence intervals, there is still some uncertainty around the point estimates. This uncertainty is particularly large for the coefficient on the output gap in the inflation equation which is statistically insignificant. Thus, the optimal rule obtained above may perform poorly if the parameter's true value is very different from the estimated one. Also, the optimal rule does not account for the impact of additive shocks, since it is derived under the assumption that the certainty equivalence principle holds. Some robustness is therefore preferable (Hansen and Sargent, 2008). It is possible to design a rule that would ensure stability of the system under both parametric uncertainty and persistent shocks, as long as they are drawn from bounded sets. The uncertainty sets could be calibrated to the confidence intervals of estimated parameters and regression variances. The main idea is to use stability theory to find the smallest set around the origin that is invariant with respect to the system dynamics (figure). Application of the invariant set approach results in the following rule:



$$rr_r = 0.678gap + 1.859p - 0.536p_{-1} + 0.140rr_{-1} .^7$$

7. **Illustrative simulations suggest that the robust rule has superior performance in the presence of uncertainty.** Using the estimated model, the evolution of inflation and the output gaps are simulated under four different scenarios: (1) no uncertainty; (2) parametric uncertainty only; (3) persistent shocks and parametric uncertainty; and (4) persistent and temporary shocks and parametric uncertainty. Specifically, for illustrative purposes, it is assumed in Scenario 2 that the coefficient on the output gap in the inflation equation is equal

<sup>7</sup> See Rozenov (2017) for technical details. One important difference from the fiscal sustainability problem is that in the case of stabilization, the goal is to find the smallest invariant ellipsoid around the origin. For the purpose, the maximization problem in the cited paper is replaced with a minimization problem with respect to the trace of the ellipsoid's shape matrix.

to the point estimate plus one standard deviation, and the coefficient on the lagged real rate is equal to the point estimate minus one standard deviation. Scenario 3 takes the same parameters as Scenario 2 and assumes in addition a persistent negative shock to output of 0.25 percent per quarter. Finally, Scenario 4 adds on top of Scenario 3 a temporary positive shock to inflation of 0.5 per quarter for four quarters, starting from the second one. Outcomes are compared for three interest rate rules: (i) optimal rule; (ii) robust rule; and (iii) the classical Taylor rule.

8. **The results across the four scenarios were as follows:**

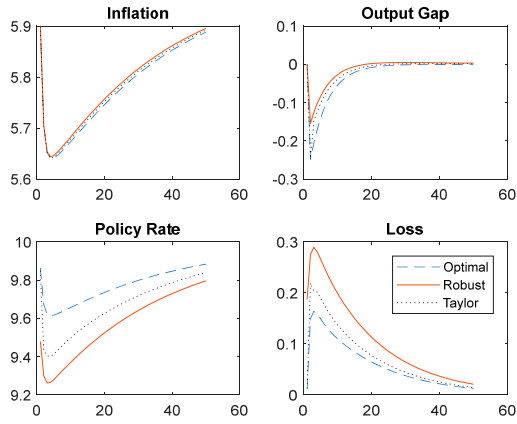
- **Scenario 1.** In the absence of shocks and parametric uncertainty, as expected, the optimal rule performs better than the robust and Taylor rules, but the outcomes for inflation are very close. The robust rule suggests more aggressive adjustments to the interest rate, which result in lower output volatility (Table 2); however, since interest-rate changes are penalized in the loss function, the instantaneous loss associated with the robust rule is larger.
- **Scenario 2.** The robust rule helps bring inflation back to the target faster compared to the other two rules. As in the previous case, the higher loss stems from more aggressive changes to the interest rates and somewhat higher output gap volatility.
- **Scenario 3.** In the presence of both parametric uncertainty and a permanent adverse shock to output, the robust rule exhibits superior performance. The optimal rule, on the other hand, leads to instability as the timing and the size of adjustment of the interest rate are not well suited to counteract the widening of the output gap.
- **Scenario 4.** As in the previous case, the robust rule achieves significantly better results in stabilizing the system. It prescribes a relatively steep interest rate increase for the duration of the inflation shock and larger cuts thereafter.

9. **The NBK could benefit from integrating in its decision-making process consideration of interest rate projections implied by an additional set of rules.** In addition to the QPM rule, optimal and robust rules could provide useful benchmarks. The original Taylor rule should be part of the toolkit as well given its broad acceptance; moreover, it seems to perform reasonably well in a range of circumstances. Other rules, such as variations of the Taylor rule (see Taylor and Williams, 2010) or difference rules along the lines of Orphanides (2003) could be considered as well.

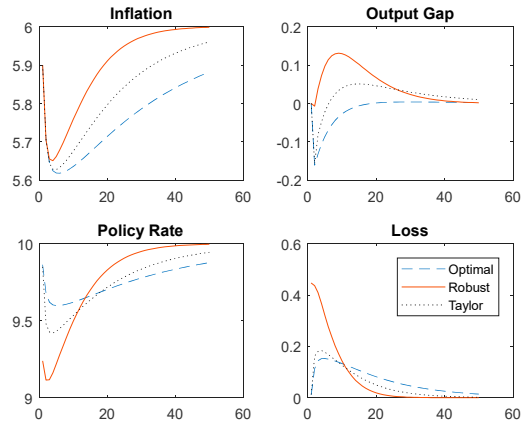


Figure 2. Kazakhstan: Simulations Results

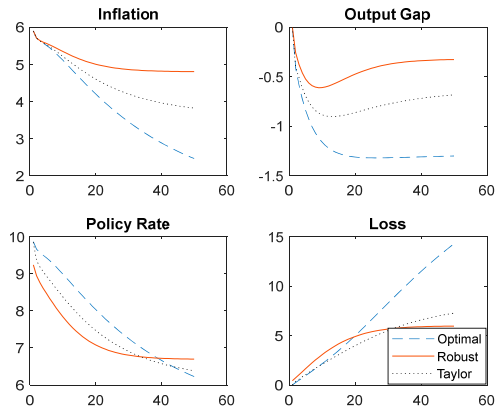
A. Scenario 1



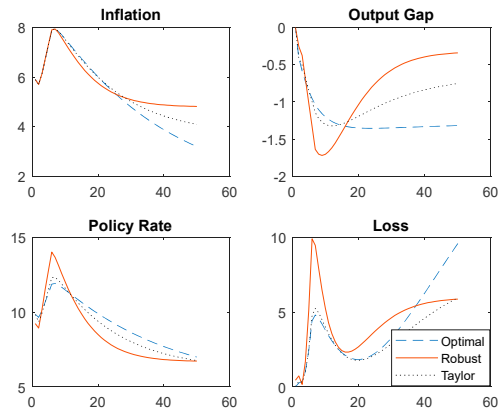
B. Scenario 2



C. Scenario 3



D. Scenario 4



Source: IMF staff calculations.

**Table 2. Kazakhstan: Inflation and Interest Rate Volatility**

	<b>Optimal rule</b>	<b>Robust rule</b>	<b>Taylor rule</b>
<b>Scenario 1</b>			
Inflation	0.0561	0.0523	0.0541
Output gap	0.0039	0.0014	0.0026
<b>Scenario 2</b>			
Inflation	0.0675	0.0225	0.0424
Output gap	0.0015	0.0043	0.0016
<b>Scenario 3</b>			
Inflation	5.3905	0.9902	2.5171
Output gap	1.5054	0.1899	0.5942
<b>Scenario 4</b>			
Inflation	2.4897	1.0038	1.5543
Output gap	1.5740	0.8622	1.0158

Source: IMF staff calculations

Note: Variability is measured as the sum of the squared deviations of inflation from target and of output gap from zero, divided by the length of the time period.

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## REFORMING RESERVE REQUIREMENTS<sup>1</sup>

The National Bank of Kazakhstan (NBK) operates a complex system of reserve requirements (RRs) that could be simplified, with just two rates applied, based on currency of denomination of liabilities, with a higher rate for FX liabilities. There is a case for raising RR rates to support NBK sterilization efforts, but if RRs are set higher than the current levels, the difference should be remunerated. Cash in vaults should be excluded from the eligible RR assets, or at least significantly limited, possibly in combination with allowing banks to use their FX deposits at the NBK against FX liabilities

1. **The NBK applies a complex system of RRs.** It involves different rates based on residency, maturity, and currency of denomination of liabilities (Table 1). For RR purposes, short-term liabilities are defined as liabilities up to one year. The maintenance and calculation periods are set at 28 days and fulfilment of RRs is defined in terms of averages; the average amount of the eligible reserve assets during the maintenance period should be not less than the average RR for the calculation period. Currently, all cash holdings in domestic currency are recognized as eligible assets. RR are not remunerated.

**Table 1. Kazakhstan: Current Reserve Requirement Rates (percent of liabilities)**

Liabilities in national currency				Liabilities in foreign currency			
Short-term		Long-term		Short-term		Long-term	
residents	non-residents	residents	non-residents	residents	non-residents	residents	non-residents
2	4	0	2	2	6	0	2

Source: National Bank of Kazakhstan

2. **The NBK is considering changes in RRs, aimed at simplification.** One option under discussion is to eliminate residency and introduce zero RRs for liabilities in tenge, while retaining RRs for FX liabilities at a level that would not increase the financial burden on banks. Another view is to abolish RRs altogether, as banks would maintain reserve assets for payments purposes anyway.

<sup>1</sup> Prepared by Ivan Luis de Oliveira Lima, Vassili Prokopenko and Rossen Rozenov.

3. **Options for reforms should be assessed against several criteria.** A starting point is to clarify the role that RRs will play in the monetary and financial policy framework. Of three functions discussed in Gray (2011)—prudential, monetary control, and liquidity management—the last is likely the most relevant at present.<sup>2</sup> The NBK does not target reserve money, and the prudential function is covered by liquidity requirements, deposit insurance, and the NBK’s credit facility. On the other hand, RRs can be useful for absorbing surplus liquidity. In that sense, the question of whether RRs are needed at all should receive an affirmative answer. Furthermore, RRs help maintain a more stable and predictable monetary base. In their absence, volatility of reserve money would likely track volatility of payments, as banks improve liquidity management to minimize the holdings of NBK reserves that do not bear interest (see Heller and Lengwiller, 2003).

4. **If RRs remain part of the NBK’s toolkit, the following issues deserve attention:**

- *Base.* At present, banks are not required to hold reserves against long-term liabilities of residents in domestic currency or FX. While it is relatively common to exclude liabilities with longer maturities (usually above two years), in Kazakhstan, it would seem preferable to extend the RR to all liabilities, as the distinction between demand and term deposits is largely formal, because there are no significant penalties for early withdrawal. Imposing different RR rates depending on original maturity would thus create incentives for window-dressing of bank financial reports. As is currently the case, the base for RRs should comprise liabilities in both domestic and foreign currencies, except liabilities to other financial institutions subject to the same RR regime.
- *Rates.* Although it is generally recommended to apply a uniform rate for all liabilities, many central banks set different rates depending on maturity and currency of denomination. Sometimes, differentiation is also made on the size of the financial institution, the type of depositor (individual vs. corporation), or residency. In Kazakhstan, three of these five characteristics are being employed, resulting in eight categories of liabilities to which four different rates are applied. It would be advisable to simplify this structure and reduce the categories of liabilities by eliminating residency principle as a minimum. In the past, when domestic banks relied heavily on foreign sources of funding, there may have been a stronger case for imposing higher RR on non-residents. At present, there is little value in differentiating between residents and non-residents. Moreover, as liabilities to non-residents are, as a rule, denominated in FX, setting different rates for tenge and FX liabilities would largely have a similar effect. Thus, assuming that the base for RR would include all liabilities, there could be just two rates – one for tenge and one for FX. Keeping differentiation by currency denomination is recommended, as it could help reduce dollarization, which is still high. On the specific rates, these should depend on whether reserves are remunerated or not. If reserves are not remunerated, it would seem appropriate to keep rates relatively low, e.g., 4 percent for tenge

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<sup>2</sup> RRs have been used also to reduce dollarization or to control capital flows in some cases.

and 6 percent for FX. If higher rates are chosen, which seems justified at present, the difference between the new rates and 4 and 6 percent, respectively, should be remunerated.

- Remuneration.* It is well known that unremunerated RR affect the spread between interest rates on deposits and loans and are equivalent to a tax on financial intermediation. Therefore, to reduce the distortions arising from this implicit tax, especially when RR rates are high, many countries pay interest on RR. In principle, the decision on whether to remunerate should be based on the central bank's goals. In Kazakhstan, interest spreads remain relatively high. At the same time, there is significant surplus liquidity in the banking system, which is sterilized mainly through NBK notes. Accordingly, it might be preferable to move from the present system of low, unremunerated RR to higher rates, combined with remuneration and gradual reduction of the share of RR that can be met with cash in vaults. Since the remuneration rate should reflect opportunity cost, in the current environment of structural surplus liquidity the appropriate rate would be that at which the NBK carries out sterilization operations. Offering an interest rate equal to the deposit facility rate would help in draining liquidity at little additional cost for the NBK. For FX, remuneration could be set below LIBOR to discourage dollarization.
- Assets.* The existing regulation allows RR to be fulfilled with cash in vault. There are arguments in favor and against using vault cash to meet RR. As pointed out by Gray (2011), (i) cash is a central bank liability, just like commercial bank balances at the central bank (although only banks can have the latter); and (ii) inclusion of cash supports banks represented in rural areas, which typically operate with more cash. As a counterargument, there are considerable definitional and measurement difficulties, especially for banks with large branch networks and potential for misreporting. In deciding whether vault cash should continue to be recognized as an RR reserve asset, the NBK should carefully consider to how individual banks will be affected by limits or exclusion. If bank-by-bank analysis suggests that the impact of removing cash would be moderate, the NBK could phase it out, given measurement issues. This could be done in stages. Another issue is currency of reserve assets. In principle, in a stable economic environment, it is preferable to denominate reserve assets in domestic currency, regardless of the currency of the underlying liability. As argued by Gray (2011), domestic currency denomination can act as an automatic stabilizer in the event of moderate depreciation pressures. However, in periods of large ER fluctuations, this can complicate bank liquidity management, since the tenge equivalent may vary significantly. Given that commercial banks in Kazakhstan already hold large FX deposits at the NBK, allowing them to use part of these deposits to meet the RR for FX liabilities would not require any additional effort and would in fact represent relaxation of the current RR regime. It is advisable to consider this move only in conjunction with the elimination, or at least a significant reduction, of cash in vaults as a reserve asset.
- Other issues.* A few additional issues may emerge in relation to possible changes in RRs. These include averaging, carry-overs and penalties. It is generally recommended that RRs are fully lagged and calculated using daily liability averages. The NBK applies averaging but there are concerns that banks could use all their balances for transactions during the day and replenish their accounts at the close of business, which is perceived as contrary to the NBK's goal of

immobilizing liquidity. Yet, to the extent that averaging is essential for enhancing banks' liquidity management, eliminating it would have undesired consequences in terms of high short-term interest rate volatility. Most central banks impose penalties if a commercial bank fails to comply with the RR. The penalty rate is typically set higher than the credit-facility rate. Ordinance 38, which regulates RRs in Kazakhstan, does not seem to have such provisions. Unless this issue is regulated elsewhere, this gap should be filled. Finally, some central banks allow for small carry-overs (shifting surpluses or deficits) to smooth transition between two maintenance periods. Such a provision is usually introduced to reduce volatility of the overnight rate at the end of the maintenance period.

5. **In summary, a reform of RRs in Kazakhstan should be guided by goals that the NBK aims to achieve.** At a minimum, the system should be simplified by eliminating residency. The blurred boundary between demand and term deposits largely defeats the purpose of having different rates for liabilities of different maturities. Maintaining differentiation between deposits in local and foreign currencies, on the other hand, seems necessary, with FX liabilities facing higher RR rates than tenge liabilities to facilitate dedollarization. In an environment of structural surplus liquidity, raising the RR rates from their current level would support NBK's sterilization efforts; however, given the low level of financial intermediation and stagnant credit, the NBK should consider remunerating RR above the current maximum levels of 4 percent for domestic and 6 percent for FX liabilities. The rate of remuneration could be set equal to the deposit facility rate for domestic liabilities and below LIBOR for FX liabilities. Banks could meet their FX RR with balances on their dollar accounts at the NBK if cash in vaults is excluded from eligible reserve assets, or at least its use is significantly limited. The principle of averaging should be maintained, and a small carry-over could be considered between two consecutive maintenance periods. Finally, it is important to clearly specify the penalties for non-compliance with RR.

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# MACRO-FINANCIAL ASSESSMENT<sup>1</sup>

*In the last two years, Kazakhstan's banking sector has gone through significant stress, resulting in large fiscal costs and reduced effectiveness of the monetary transmission mechanism. At the same time, the impact of banking difficulties on economic growth has been relatively mild, since the natural resource sector—which dominates the Kazakh economy—receives financing directly from abroad. Stronger and more effective macro-financial linkages would require improvement in the condition of banks and enhancements to the regulatory framework. Over the longer term, efforts are needed to promote financial development, which will be critical for diversified, sustainable, and inclusive growth.*

## A. Condition of the Banking Sector

1. **Kazakhstan's banking system is relatively small and increasingly concentrated.** As of January 2018, there were 32 banks with total assets of KZT 24 trillion (US\$73 billion, or 47 percent of GDP). Most banks are owned by local private investors. Market concentration has increased in recent years, as several banks have merged or closed. The largest bank, Halyk, accounts for 20 percent of system assets, and is in the process of absorbing the second largest bank, Kazkommerzbank (KKB, 14 percent of system assets), following its purchase in 2017.<sup>2</sup>
2. **Many banks experienced difficulties during two recent shocks.** Some difficulties stem from deleveraging triggered by the global financial crisis of 2008-09, which affected large Kazakh banks. In 2014-15, Kazakhstan was hit by another external shock related to the collapse in oil prices, a slowdown in China, and geopolitical uncertainties. The economy slowed, and the tenge was floated, with a drop-in value of around 30 percent, which further compounded difficulties, as FX loans accounted for around one-quarter of all loans in mid-2015.
3. **Notwithstanding the severity of external shocks, the fundamental cause of difficulties in Kazakhstan's banks appears to have been weak governance.** This problem—common in other former Soviet Union countries—has been persistent in Kazakhstan for many years. Strategic planning and credit risk management are compromised, particularly by insider or related-party lending. Limited regulatory authority and powers of the National Bank of Kazakhstan (NBK) have impeded effective actions to prevent the buildup of vulnerabilities.
4. **In August 2017, the NBK adopted a Bank Recovery Program (BRP) to address these problems.** The program had four pillars: (i) merger of two largest banks (Halyk and KKB); (ii) capital injection to other large banks through NBK subordinated loans with a maturity of 15 years and low interest rates; (iii) phased injection of new capital by shareholders; and (iv) improvements in the regulatory and supervisory frameworks. These actions were supported by cleaning up of the balance

<sup>1</sup> Prepared by Vassili Prokopenko.

<sup>2</sup> KKB, which was the largest bank until recently, experienced difficulties after its acquisition of the nationalized BTA bank in 2014. BTA was a poorly-run bank with an NPL ratio close to 100 percent. KKB's performance indicators deteriorated sharply with the 2014-15 shocks. The Halyk-KKB is expected to be completed in the second half of 2018.

sheets of two large banks (KKB and RBK Bank), in the case of KKB by selling NPLs to the state Problem Loan Fund (PLF).<sup>3</sup>

## B. Macro-Financial Linkages

### Real-Financial Linkages

5. **Interconnectedness between the financial and real sectors is relatively limited in Kazakhstan.** Over the past ten years, credit growth has been lower than GDP growth most of the time. As a result, financial intermediation—the ratio of credit to GDP—has been on a declining trend. Total bank assets or loans in percent of GDP are significantly lower in Kazakhstan than in many other CIS countries.
6. **Weak real-financial linkages partly reflect the economic structure in Kazakhstan.** Key economic sectors obtain financing directly from abroad—oil and metals, which account for almost 40 percent of GDP. Many oil or mining companies are subsidiaries of big international firms and find it easier to obtain intercompany loans or to borrow abroad from foreign banks.
7. **The link from credit to the non-mining economy is also difficult to discern.** The non-mining corporate sector relies significantly on self-financing or borrowing from international or Kazakhstani development institutions. Financing of construction and real estate is also linked to wholesale funding from abroad. Only household consumption appears to be closely affected by credit developments.<sup>4</sup>

### External-Financial Linkages

8. **While Kazakhstan is a relatively open economy, direct external-financial sector linkages are limited.** External assets and liabilities of Kazakh banks represent a small fraction of their balance sheets. Domestic deposits accounted for 79 percent of banks' non-equity funding at end-2017. Access to international wholesale markets remains restricted for most banks due to risk perceptions for many banks, as well as the experience of default of several large Kazakh banks in 2009-14. The penetration of foreign banks in Kazakhstan is small; several foreign banks exited Kazakhstan after 2010.<sup>5</sup> The presence of Kazakh banks abroad is also limited.
9. **Large buffers in the form of the NFRK has helped mitigate the effects of terms of trade shocks.** A deterioration of the terms of trade may result in public spending cuts and a broader

<sup>3</sup> PLF was established in 2012 to help improve bank loan quality. Its main activities include purchasing bad loans from commercial banks, managing assets, and issuing debt securities to finance its activities. The PLF was initially owned and managed by the NBK. In 2017, ownership was transferred to the government.

<sup>4</sup> [http://www.imf.org/~media/Websites/IMF/imported-full-text-pdf/external/pubs/ft/scr/2015/\\_cr15241.ashx](http://www.imf.org/~media/Websites/IMF/imported-full-text-pdf/external/pubs/ft/scr/2015/_cr15241.ashx)

<sup>5</sup> Royal Bank of Scotland, Unicredit, and HSBC exited the Kazakh market after 2010. Foreign banks—mostly subsidiaries of large Russian banks—now account for around 15 percent of banking system assets.

slowdown in domestic demand, contributing to increased NPLs. With a fall in the oil prices in 2009-12 and again in 2015-17, the authorities used NFRK resources to dampen the impact of shocks.

### Fiscal-Financial Linkages

**10. Involvement of government in day-to-day operations of banks is relatively limited.**

There is only one bank controlled by the government.<sup>6</sup> Government influence is mainly through distribution of deposits of government-related entities (GREs) among commercial banks and the provision of loans to banks under a variety of government-supported programs to subsidize interest rates. GREs, such as Samruk-Kazyna, the UAPF, Baiterek, and KazAgro, account for around 30 percent of deposits in the banking system.

**11. Fiscal costs of cleaning up and recapitalization of banks has been large.** In 2017, the authorities provided over KZT 3 trillion (US\$10 billion or 6 percent of GDP) to support troubled banks. This included both direct injection of government funds, as well as provision of subordinated loans by the NBK. The government allocated KZT 2.4 trillion (US\$7 billion, or 4.5 percent of GDP) to bail out KKB's largest debtor (BTA), as part of the merger of KKB with Halyk. The NBK provided loans to five large banks totaling almost KZT 700 billion (US\$2 billion).

**12. The government remains supportive toward the domestic banking system, with a focus on large, solvent banks.** In addition to bank recapitalization and cleaning up of bank balance sheets through the PLF, the government also runs various stimulus programs that help support bank balance sheets and profitability. State support is directed to large banks; in 2017-18, smaller institutions (Delta Bank, Qazaq Bank, Eximbank), had licenses withdrawn or suspended due to non-compliance with prudential requirements.

### Monetary-Financial Linkages

**13. Banking sector problems impede the effectiveness of monetary transmission.** While Kazakhstan has been implementing an inflation-targeting framework since 2015, transmission from the NBK's policy rate ("base rate") is relatively weak, especially to lending and longer-term rates.<sup>7</sup> The money market and government securities market are shallow, which impedes establishment of a benchmark yield curve. Deposit interest rate caps and subsidized lending also hamper transmission.

**14. Progress on de-dollarization should support monetary policy effectiveness.** The share of FX deposits fell to 44.5 percent in June 2017, from almost 70 percent in January 2016. Although dollarization remains high, de-dollarization reflects increasing confidence and lower inflation.

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<sup>6</sup> Zhilstroyberbank, the 10<sup>th</sup> largest bank in Kazakhstan with a market share of 3.2 percent of total assets as of January 2018, is owned by Baiterek, a state holding company, which manages stakes in various national finance institutions.

<sup>7</sup> For example, while the NBK's base rate was lowered in several steps from 17 percent in April 2016 to 9.25 percent in April 2018, the average bank lending rate remained between 14 and 15.5 percent.

## ECONOMIC DIVERSIFICATION THROUGH TRADE<sup>1</sup>

*Trade provides a route to economic diversification, given the limited size of Kazakhstan's domestic market. However, significant effort will be needed to move away from the current, highly-concentrated export structure, where most products with revealed comparative advantage are based on natural resources. Appropriate policies can alleviate some of the constraints; these include upgrading infrastructure, improving the business climate, reducing distortions, investing in human capital and R&D and reforming the agricultural sector to tap its significant potential.*

### 1. **Increasing productivity and reducing natural resource dependence are key policy priorities for Kazakhstan.**

The Kazakhstan 2025 strategic development plan focuses on productivity and growth to support the country's long-term aspiration of joining the 30 most developed nations by 2050. The plan lays out a new economic model, where growth is driven by technological innovation and strengthening the position of Kazakhstan's industries on international markets through new products with high value-added. This implies diversification and development of strong export-oriented sectors, given limited domestic demand.

### 2. **Building a more balanced economic structure would strengthen resilience to shocks.**

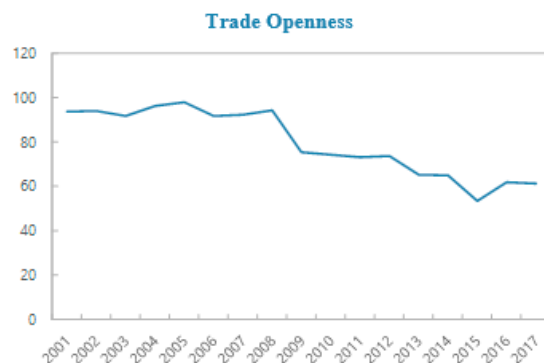
Natural resource endowments offer opportunities for growth, but also challenges to macroeconomic management. High reliance on commodities exposes economies to shifts in terms of trade, and evidence suggests that shocks to commodity prices tend to be highly persistent and asymmetric (IMF, 2012). They are often associated with substantial output and fiscal revenue volatility, and balance of payments pressures. Therefore, promoting growth of non-resource sectors would reduce vulnerability to adverse changes in external conditions.

### 3. **Trade can play an instrumental role in diversification and growth.**

Openness to trade has been associated with productivity improvements from a more efficient allocation of resources, technology transfers, lower prices due to increased competition, richer consumer choices, and ultimately, higher living standards (IMF, WB and WTO, 2018). Trade may also provide a route to diversification, especially for countries with small domestic markets.

### 4. **Kazakhstan has taken steps to liberalize trade, but openness has declined.**

Kazakhstan is one of the founding members of the Eurasian Economic Union (EEU), and in 2015, the country joined the World Trade Organization (WTO). Tariff and non-tariff barriers have been reduced—between 2010 and 2016, the average tariff rate was reduced by 2.5 percentage points to 5.1 percent.<sup>2</sup> Trade openness, measured as the ratio of exports and imports of goods and services to GDP, has decreased to 60 percent from a peak



<sup>1</sup> Prepared by Aziz Kholboboiev and Rossen Rozenov.

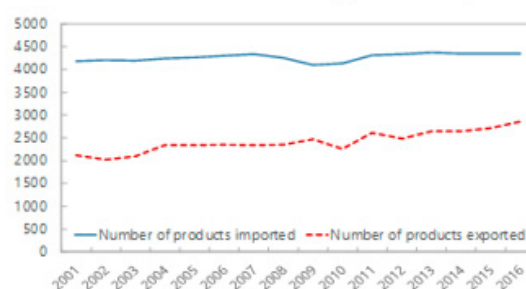
<sup>2</sup> World Development Indicators data.

level of nearly 100 percent. Relative to other EEU members, Kazakhstan is less open than Armenia, Belarus and Kyrgyzstan, but more open than Russia.

##### 5. **Crude oil dominates exports, while imports are more diverse (Figure 1).**

Kazakhstan exports about 2,900 products, based on the HS6 classification, up from about 2,100 in the early 2000s. Nevertheless, exports continue to be highly concentrated in a few commodity groups. The export-product concentration index is nearly twice as large as the average for other EEU members (Figure 2). Crude oil and petroleum products account for about 60 percent of total exports, and another 25 percent is comprised by metals, metal ores, and radioactive materials. Imports are more diversified. The number of imported goods is larger—about 4,400—and has been broadly stable. The top five products accounts for just 12 percent of total, compared to over 70 percent in exports.

**Kazakhstan: Number of Products Exported and Imported**



##### 6. **Trade patterns largely reflect Kazakhstan's endowments, constraints, and policies:**

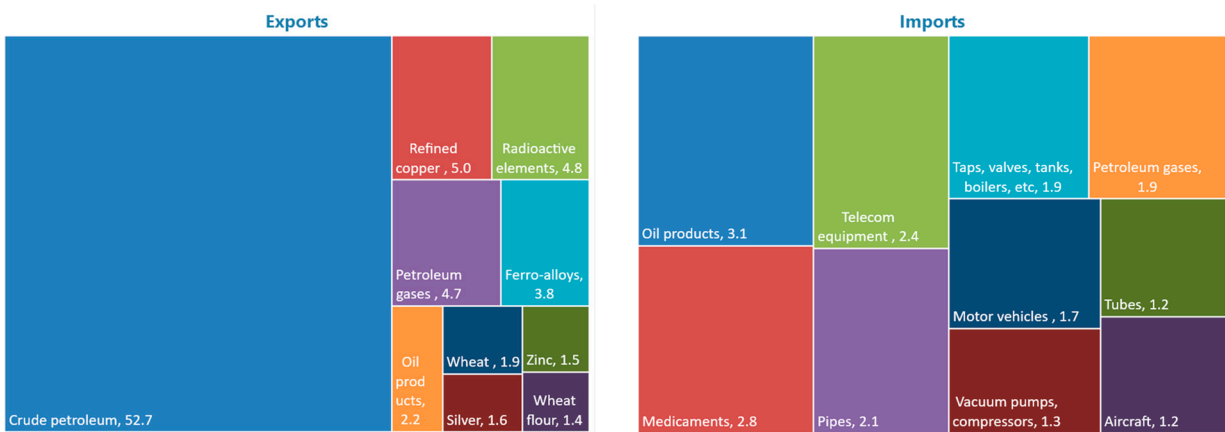
- *Endowments.* Measuring more than 2.7 million square kilometers, Kazakhstan is the world's ninth largest country by area. Over three quarters of its surface area is suitable for farming; it has 25 million hectares of arable land and 180 million hectares of pastures.<sup>3</sup> Kazakhstan has a wealth of natural resources, with some of the world's largest deposits of chromium, uranium, lead, and zinc and significant reserves of oil, copper and iron ore (U.S. Geological Survey, 2007). Kazakhstan also has relatively high human capital, as measured in the Global Human Capital Report.<sup>4</sup>
- *Constraints.* Kazakhstan is landlocked and sparsely populated, with a concentration of population in the southern, south-western, and north-eastern parts of the country. This presents challenges due to the need for maintaining adequate infrastructure to ensure connectivity. High transportation costs affect competitiveness and present an obstacle to increasing trade. A mitigating factor is the proximity to two large markets: Russia and China.
- *Policies.* Kazakhstan has made progress in improving the business environment, especially protecting minority investors, enforcing contracts, and registering property. Trading-across-borders and logistics are areas of relative weakness, with high costs of border and documentary compliance and shortcomings in customs administration, infrastructure, logistics quality, tracking, and tracing.<sup>5</sup> The state's presence in most sectors may deter diversification as entrepreneurs face challenges in growing to become competitive internationally.

<sup>3</sup> Ministry of Agriculture data, <http://mgov.kz/ru/zher-resurstary/>

<sup>4</sup> <http://reports.weforum.org/human-capital-report-2016/economies/#economy=KAZ>

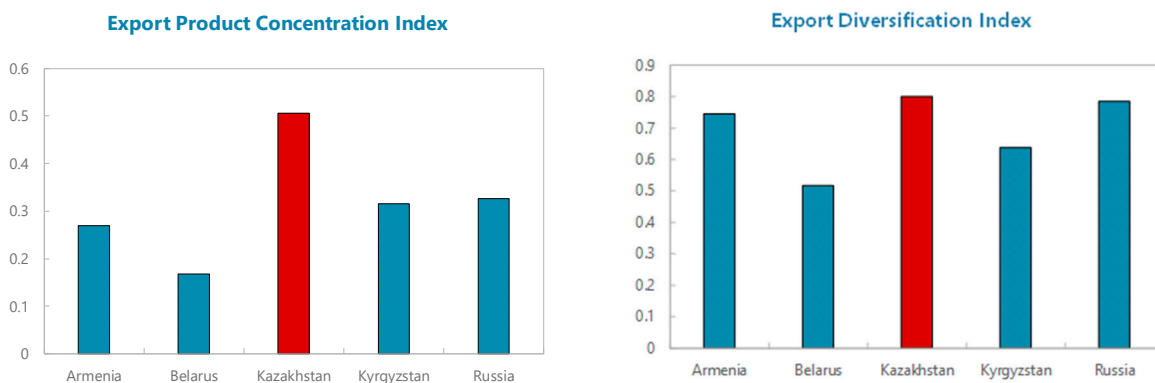
<sup>5</sup> <https://lpi.worldbank.org/international/scorecard/radar/254/C/KAZ/2016#chartarea>

**Figure 1. Kazakhstan: Top 10 Exports and Imports in 2016 (HS4, percent of total)**



Source: COMTRADE, IMF staff calculations

**Figure 2. Kazakhstan: Export Concentration and Diversification**

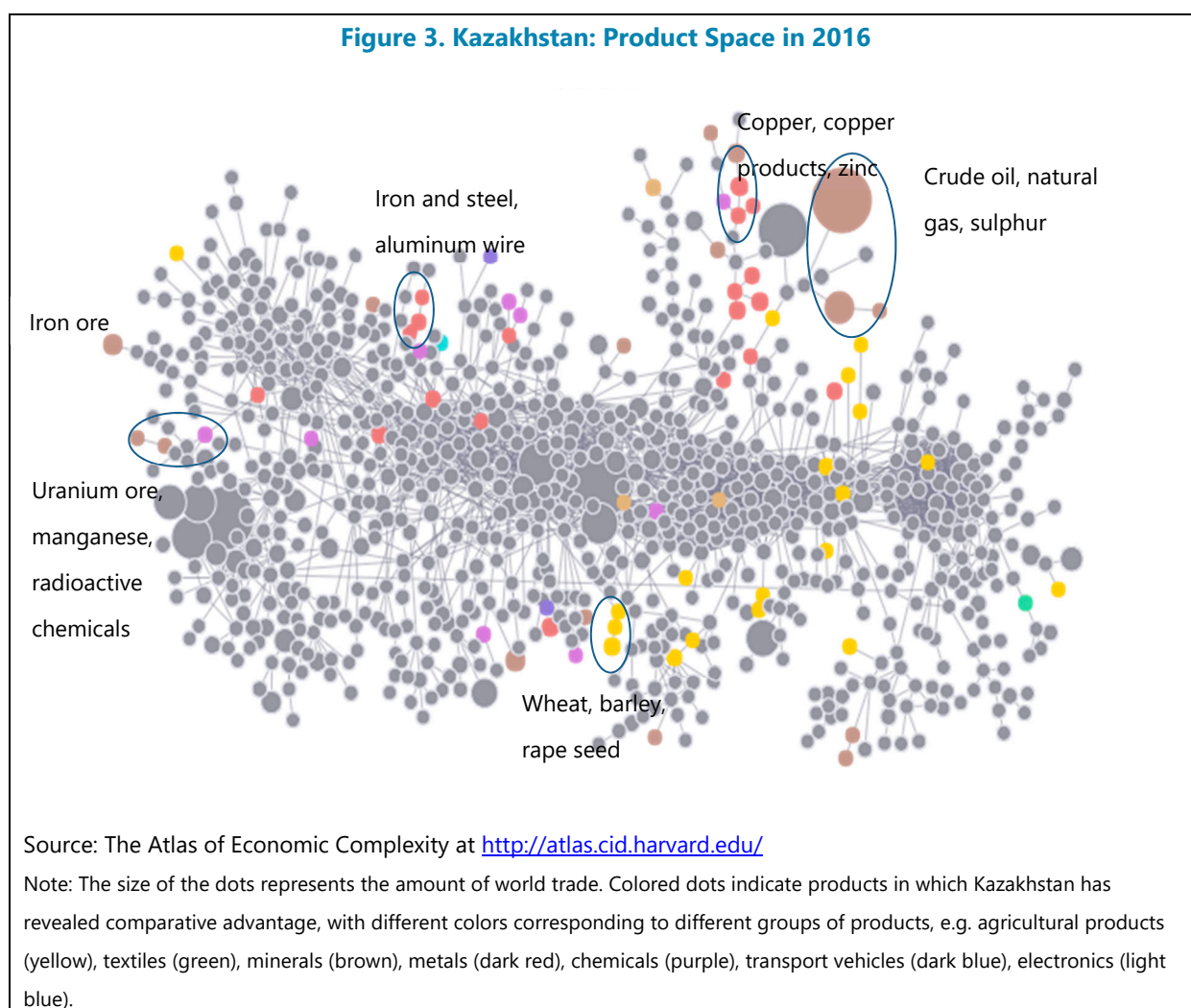


Source: WITS

## Product Space

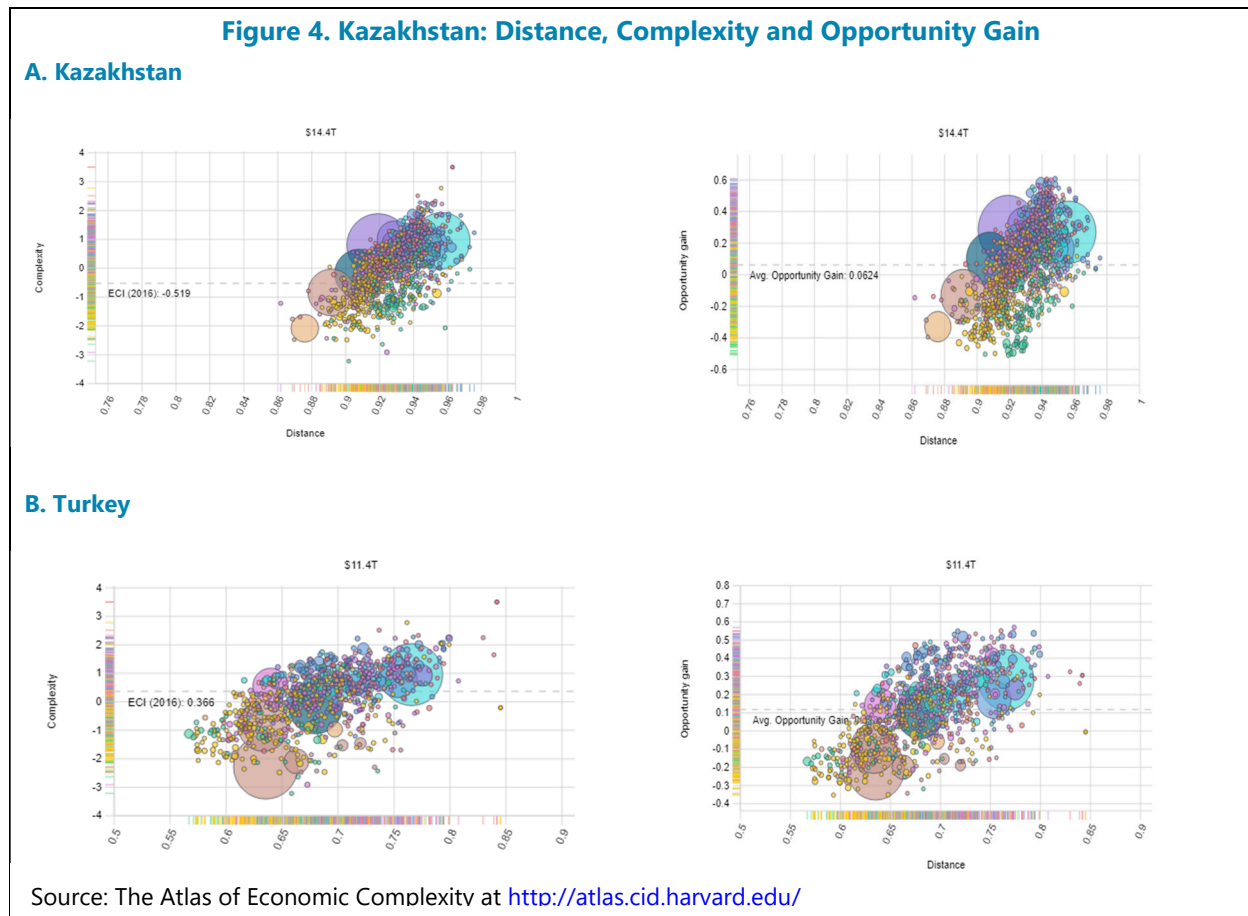
7. **“Product space” is a useful tool to identify opportunities for increasing trade and diversification.** Hausmann and others (2013) discussed product space, with the underlying idea being that a country’s export goods embed a large variety of factors— physical and human capital, policies, institutions, organizations, etc.—that cannot be easily separated and measured explicitly. However, if a country successfully exports a particular product, this implies that it has the required capabilities. Different products entail different sets of capabilities; however, countries that specialize in a particular product also tend to export similar products, as these require similar capabilities. This leads to a notion of “proximity”—the probability that a pair of products is co-exported. The “product space” is a network-graph connecting products that are significantly likely to be co-exported. More sophisticated products require more complex capabilities and are produced by fewer countries; such products are situated in the center of the product space network-graph.

8. **The product space approach is made operational by deriving a measure of economic complexity to characterize a country's export structure.** *Complexity* is related to both diversity (the number of products in which a country has a revealed comparative advantage (RCA) according to the classical definition) and *ubiquity* (the number of countries that have RCA in a given product). Complexity is positively correlated with per capita income, and for a given level of income, countries with higher complexity grow faster (Hausmann and others, 2013). The product space approach has considerable practical appeal as it offers a framework to “predict” the evolution of trade patterns. It provides insights into the feasibility of developing new products that would increase the complexity of Kazakhstan's economy, resulting in a more diverse structure.



9. **Kazakhstan specializes in low-complexity products in the periphery of the product space; this presents challenges to diversification.** Over the last five years, Kazakhstan has been able to increase significantly the number of goods in which it has RCA. However, the majority of these products—oil and gas, coal, ores, metals, agricultural products—are situated in the periphery of the product space. This suggests that the factors required for their production are not easily deployed in the production of other goods, making diversification into new products difficult (Figure 3). In general, the ability to diversify and move into more complex products depends on the initial

position in the product space. Feasibility can be characterized in terms of distance of a product to the country's export mix. Ideally, countries move to goods with higher complexity and opportunity gains. Figure 4 compares the feasibility charts for Kazakhstan and Turkey. It shows that for Kazakhstan, it is more difficult to diversify into higher-complexity products, given larger distances. Examples of products with above-average complexity and opportunity gains and relatively short distances include oats, asphalt, aluminum powders, railway cars, motor vehicles, agricultural machinery.



10. **Some constraints to export diversification can be alleviated by policies.** These include:
- *Upgrading infrastructure.* Kazakhstan should take advantage of its strategic location and continue to invest in upgrading road and rail infrastructure to reduce trade cost and improve connectivity. Improvements have been made in recent years under Nurdy Zhol, and the BRI offers opportunities going forward. The need for infrastructure investment has fiscal implications; to maintain sufficiently high capital outlays without compromising fiscal sustainability, the government should generate additional revenue, preferably from the non-oil sector. PPPs can be used as well, provided they are properly designed and monitored.
  - *Improving the business climate.* Despite recent progress, there is room for improvement in the business climate through deregulation, simplifying procedures, and reducing red tape and corruption. This would create conditions for private companies to make productive investments to develop new products and create jobs. The various reform initiatives,



including the “100 Concrete Steps,” recent amendments to the entrepreneurial code, and a program for improving global competitiveness target the right areas. Implementation is key.

- *Reducing distortions.* Misallocation of resources arising from subsidies, preferential tax treatments, and product or labor market regulations can lead to a decrease in aggregate output and total factor productivity (Restuccia and Rogerson, 2008). This calls for phasing out loan subsidy programs, removing tax exemptions as companies generate profits and replacing them with incentives linked directly to investments, and reconsidering the “social function” of SOEs in terms of maintaining employment or loss-generating services.
- *Investing in human capital and R&D.* The key to diversification into more complex products is accumulation of requisite knowledge. This is recognized by the authorities, and they have introduced measures to enhance human capital development, including the “Bolashak” program under which more than 13,000 students have been sent to study abroad, attracting foreign professors to local universities, creating a network of schools for gifted children, and updating general school curricula. More could be done to promote R&D. Kazakhstan spends just 0.2 percent of GDP on R&D, significantly less than the world’s average.<sup>6</sup> Besides direct public spending, incentives (e.g., targeted tax credits) could be provided for R&D activities. Collaboration among universities, research centers, and industry should be encouraged.
- *Reforms in agriculture.* Kazakhstan’s agricultural sector has an enormous potential, but reforms are needed to increase efficiency and productivity. These include removing constraints to land ownership and long-term lease and incentivizing appropriate land use, including through tax instruments, reducing subsidies, and increasing bank involvement in financing.<sup>7</sup>

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<sup>6</sup> World Development Indicators data.

<sup>7</sup> For more detailed analysis and recommendations, see World Bank (2017).

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