March 2011
IMF Country Report No. 11/69

Republic of Belarus: Selected Issues Paper

This selected issues paper on the Republic of Belarus was prepared by a staff team of the International Monetary Fund as background documentation for the periodic consultation with the member country. It is based on the information available at the time it was completed on February 17, 2011. The views expressed in this document are those of the staff team and do not necessarily reflect the views of the government of the Republic of Belarus or the Executive Board of the IMF.

The policy of publication of staff reports and other documents by the IMF allows for the deletion of market-sensitive information.

Copies of this report are available to the public from

International Monetary Fund • Publication Services
700 19th Street, N.W. • Washington, D.C. 20431
Telephone: (202) 623-7430 • Telefax: (202) 623-7201
E-mail: publications@imf.org Internet: http://www.imf.org

International Monetary Fund
Washington, D.C.

INTERNATIONAL MONETARY FUND

REPUBLIC OF BELARUS

Selected Issues

Prepared by Shuang Ding, Dmitriy Kovtun, Eliza Lis (all EUR), and Lorenzo Forni (FAD)

Approved by the European Department

February 17, 2011

Contents Page

I. Inflation Targeting in Belarus—Challenges and Options[1]

Given Belarus's strategic aim at inflation targeting as a successor of the current monetary framework build around the exchange rate peg, there is a question about what preparatory work needs to be done in order to implement such a regime. This note outlines the essential building blocks of a full-fledged inflation targeting regime, assesses Belarus' preparedness along each dimension and suggests possible policy actions.

1. **The Belarus authorities are moving in the direction of a flexible exchange rate system supported by inflation-targeting (IT) regime which would have significant benefits for the economy.** The authorities' Program for Social and Economic Development for 2011-15 (the "five-year plan") envisages a gradual transition towards a more flexible exchange rate regime and the NBRB requested technical assistance in the area of modeling to increase preparedness for IT. A flexible exchange rate regime would shield the economy from external shocks. Inflation targeting, in turn, is likely to help the economy attain lower inflation in the long term, have smaller inflation responses to shocks, strengthen monetary policy independence, improve monetary policy efficiency and obtain inflation outcomes closer to target levels (Mishkin and Schmidt-Hebbel, 2007).

2. **A full-fledged IT framework (FFIT) requires a number of essential building blocks, which could be viewed as components of sound macroeconomic management.** A review of international experience suggests the following building blocks: (i) a central bank mandate to pursue an explicit, publicly announced inflation target as an overriding objective of monetary policy; (ii) central bank operational independence; (iii) absence of fiscal dominance; (iv) transparency and accountability in the conduct and evaluation of monetary policy actions; (v) sound as well as well-regulated and supervised financial sector; and (vi) a reliable methodology for forecasting inflation and its link with other macroeconomic aggregates as well as a forward-looking operating procedure that incorporates forecasts into policy actions and responds to deviations from targets (Freedman and Otker-Robe, 2009; IMF, 2007). These blocks constitute a part of a broader expectation that a market-based mechanism of allocating resources is in place and the authorities' overall macroeconomic management is sound and consistent with that mechanism.

3. **How does Belarus fare against the requirements outlined above?** As a dominant share of the economy is still directly controlled by the government and the authorities rely on elements of central planning in economic management, the modest role of the market-based mechanisms in resource allocation is a significant challenge in moving towards IT. The following observations could be made relative to the specific building blocks:

[1] Prepared by Dmitriy Kovtun.

- ***Inflation target as an overriding objective of monetary policy.*** At present, there is ambiguity in the current assignment of the responsibility to control inflation among the NBRB and government agencies. The NBRB's explicit objective is to assure stability of the rubel.

- ***Operational independence.*** Despite steps towards increasing operational independence taken under the Fund Stand-by Arrangement, it is unlikely that the NBRB could deviate from the overall course set by the 5-year plan in order to pursue its inflation objective. Certain aspects of the NBRB's activity are reminiscent of functions of a development bank pursuing social goals set by government. The IT regime, however, requires a central bank's capability to act independently even if it involves unpopular tightening of monetary policy.

- ***Absence of fiscal dominance.*** This requirement of an inflation targeting regime—that government access to central bank credit be limited or prohibited—arises from the fact that if the central bank has to finance the government deficit, it cannot exercise control over its balance sheet and therefore is unlikely to achieve a desired inflation target. In Belarus, there is a sign of strong fiscal (or rather "quasi-fiscal") dominance: the NBRB plays an active role in supporting lending under government programs (LGP) by extending credit to state banks. In 2010, the volume of lending on non-market terms for the purposes of financing LGP surpassed standard market-based liquidity operations, weakening the transmission mechanism of monetary policy.

- ***Transparency and accountability.*** The NBRB provides adequate communications regarding its market-based operations. However, the non-standard operations—which surpass the regular liquidity support instruments—are opaque.

- ***Sound and well-regulated and supervised financial system resilient to possible exchange rate and interest rate shocks.*** Implementing the IT regime in economies with vulnerable financial systems is challenging as exchange rate and interest rate flexibility—key trademarks of an IT regime—would be constrained by the ability of financial institutions to withstand exchange rate and interest rate shocks. In many economies, the soundness of the financial system is supported by adequate regulatory framework and supervision. In Belarus, the regulatory framework is broadly adequate. However, there are recurring challenges of enforcing the prudential norms in large state banks.

- ***Reliable methodology for forecasting inflation and the operating procedure for incorporating insights from the model into decision-making.*** Since 2005, the NBRB has made substantial progress in building a system for forecasting and policy analysis (FPAS) (Box 1). In principle, the current FPAS could be used in the initial stages of IT implementation, although it would be desirable to replace the current "gap" model

with a full-fledged general equilibrium model. It is questionable, however, to what extent the NBRB can incorporate model's output into decision-making.

4. **There are three additional features that could interfere with the IT regime.** First, nearly a half of overall banking system credit is provided via lending under government programs induced by interest rate subsidies and financed by either government deposits in the commercial banks or by NBRB's credit. The government objective to develop particular sectors in the economy via directing credit to these sectors interferes with the normal transmission mechanism of monetary policy—the link between policy interest rates and domestic demand becomes tenuous, making it difficult for the NBRB deliver an inflation objective with its interest rate instruments. Second, Belarus's financial system is highly dollarized, implying that it is more difficult to attain the inflation target using the usual interest rate channel. Finally, given the low depth of the foreign exchange markets, even relatively small amounts of speculative capital flows can significantly affect the market and the national currency rate.

5. **What are the necessary actions that would enable Belarus to implement the IT framework?** The overarching priority is to increase the role of the market forces in the economy and reform macroeconomic management in order to normalize the transmission mechanism of monetary policy. These priorities relate not only to the NBRB alone but rather to the entire public sector—the government should embark on the task of switching from command-and-control management to market-based policy tools. There is a need to advance along multiple dimensions:

- *Set price stability as the main objective of monetary policy*. It is necessary to make legislative changes that would allow the NBRB focus on price stability rather than on stability of the exchange rate.

- *Boost the operational independence of the NBRB.* The NBRB should be given exclusive power to conduct monetary policy operations. The Monetary Policy Guidelines should be prepared exclusively by the NBRB without the need to seek consensus with government agencies, and the NBRB should be freed from pressure to set interest rates at a low level, or deliver high banking system credit.

- *Curtail "quasi-fiscal" dominance by eliminating unsecured lending to banks for the purposes of financing LGP and reduce interference exerted by LGP on the transmission mechanism of monetary policy.* It is essential to free the NBRB from the pressure to provide resources for government programs at non-market terms. More generally, LGP needs to be moved to a Development Bank. This measure would free banks from non-market lending and therefore increase the effectiveness of the transmission mechanism of monetary policy. In addition, direct NBRB's involvement in non-core business should be curtailed.

- *Improve communications related to monetary policy*. Regular public justification of changes in NBRB's policies would ensure economic agents' confidence in monetary policy. There is a need to strengthen openness and transparency of monetary policy and to inform the public about the directions of the monetary policy and the progress of its implementation.

- *Take further steps towards improving regulatory framework of the financial sector.* The NBRB should strengthen its supervisory independence to ensure the effectiveness of banking regulation. Another important step will be to move away from the current mainly compliance-based approach to supervision and develop an overarching risk-based supervision framework.

- *Further improve NBRB's forecasting and policy analysis system and use the insights from this system in decision-making.* The NBRB can benefit from technical assistance in building a general equilibrium model for forecasting inflation. More importantly, the NBRB needs to develop procedures for incorporating the results of the current FPAS into monetary policy operations.

- *Deepen foreign exchange markets and develop financial markets in general*. The NBRB can stimulate FX market development by allowing greater exchange rate flexibility through widening of the de-facto fluctuation band, reducing its market role by curbing its market-maker function. More generally, the authorities should remove obstacles for development of non-bank financial institutions.

6. **Whereas some of the building blocks are essentially prerequisites for a successful launch of the IT regime, others could be developed (or fine-tuned) during early stages of IT implementation.** The list of essential preconditions include (i) priority of the inflation target as the objective of monetary policy, (ii) operational independence of the central bank and (iii) absence of fiscal dominance (Freedman and Otker-Robe, 2007). Other building blocks, such as sophisticated models for forecasting inflation, transparency and accountability of the central bank and deepening of the financial system could be finished subsequent to the adoption of the IT. In a case of relatively early adoption of a floating exchange rate regime, the monetary framework could feature a "transitional" regime while making progress towards putting essential building blocks of a FFIT in place.[2] However, premature announcement of IT before the minimum set of conditions are met should be avoided given the importance of maintaining credibility of the new regime.

7. **It should be noted that many of these actions should be taken regardless of the chosen monetary framework.** Boosting independence of the NBRB, reducing fiscal

[2] Stone (2003) discusses challenges of operating "Inflation Targeting Lite"—a regime in which central banks announce inflation targets but are unable to maintain them as a foremost policy objective.

dominance in the financial system, improving monetary policy communications, developing and deepening of financial markets are steps towards modernizing economic management in general. These actions would be beneficial under any monetary regime and therefore should not be viewed as “costs” of introducing inflation targeting.

Box. Developing the System for Forecasting and Policy Analysis.

Since 2005, the NBRB has been making steady progress in the area of developing a system for forecasting and policy analysis (FPAS). This system comprises a set of analytical tools as well as institutional arrangements that allows the NBRB to assess the current state of the economy, analyze transmission mechanisms of monetary policy, produce regular forecasts (on the quarterly basis) and formally present them to the members of the NBRB Board.

Over the past years, the NBRB's FPAS has been built around a semi-structural dynamic model that was put in practical use in 2007. The model breaks down the observed macroeconomic variables into equilibrium trends and gaps using the Kalman filter technique, and then uses a set of behavioral equations to produce quarterly forecasts over the medium term (Demidenko (2008) outlines the NBRB's model and Berg et al. (2006) provide a general description of the approach). The model's parameters are calibrated. The most recent expansion of the model added equations describing the external sector. NBRB staff indicated that, in principle, the model could be used as an "introductory" piece of FPAS necessary for inflation-targeting, but there are important technical limitations that call for a more sophisticated modeling tool.

In order to overcome limitations of the current model, the NBRB took steps towards building a fully structural dynamic general equilibrium (DGE) model in 2009. Such a model is based on micro-foundations and, most importantly, allows modeling non-linear relationships among macroeconomic variables. The NBRB, however, needs further technical assistance to develop this model.

REFERENCES

Berg, Andrew, 2006, "Practical Model-Based Monetary Policy Analysis—A How-To Guide", IMF Working Paper WP/06/81.

Demidenko, M.V., 2008, "Model for Medium-Term Forecasting and Planning of Monetary Policy", Bankovskiy vestnik, No.31, pp. 41-48.

IMF, 2007, "Moving to Greater Exchange Rate Flexibility. Operational Aspects Based on Lessons from Detailed Country Experiences", IMF Occasional Paper 256.

Freedman, Charles and Inci Otker-Robe, 2010, "Important Elements for Inflation Targeting for Emerging Economies", IMF Working Paper WP/10/113.

Freedman, Charles and Inci Otker-Robe, 2009, **"**Country Experiences with the Introduction and Implementation of Inflation Targeting", IMF Working Paper WP/09/161.

Mishkin, Frederic and Klaus Schmidt-Hebbel, 2007, "Does Inflation Targeting Make a Difference?" NBER Working Paper No. 12876 (January).

Stone, Mark, 2003, "Inflation Targeting Lite", IMF Working Paper WP/03/12.

II. INVEST TO GROW—MORE BUILDINGS OR MORE MACHINES?[1]

Belarus achieved rapid economic growth in the decade before the recent global financial crisis, mainly driven by rapid accumulation of capital stock as a result of a high investment-to-GDP ratio (IMF, 2010). However, recent data show that the country's investment has been skewed toward construction and installation work, largely as a result of the government housing programs, and growth in investment in machinery and equipment (hereafter referred to as machinery) turned negative in 2009. In the post-crisis era, external financing for domestic investment is expected to be less available and more costly, and the country will have to invest in a more effective way to strengthen the growth potential. The paper discusses which investment drives faster growth based on studies of other countries' experience, reviews Belarus's recent pattern of investment in the context of the government housing programs as well as the implications for the economy, and recommends that policies be put in place to achieve balanced growth of machinery and structure investment.

A. What Do Literature and Country Experience Tell Us?

1. **A large volume of literature has been devoted to the relationship between investment and economic growth.** In the Keynesian and post-Keynesian models, investment played a critical role both as a component of aggregate demand and as a vehicle of creating productive capacity on the supply side. However, neoclassical economists such as Solow (1956) concluded that investment had a transitory but not permanent impact on growth, and that most of the differences in growth were due not to differences in measured investments, but to total factor productivity (TFP). In the endogenous growth theory developed since the mid-1980s, capital accumulation, especially machinery investment which embodies technological innovations, was believed to be among the most important determinants of long-run economic growth (Romer, 1986).

2. **Some recent studies on roles of different components of investment concluded that machinery investment boosts growth more than other investment.**

- De Long and Summers (1991 and 1993) found that: (1) there was a clear, strong and robust statistical relationship between machinery investment and productivity growth for the sample countries: over 1960-1985 each extra percentage of GDP invested in machinery was associated with an increase in GDP growth of 0.3 percentage point per year; (2) machinery investment had far more explanatory power for productivity growth than other components of investment, and the association was causal, with higher machinery investment driving faster economic growth;[2] (3) high rates of

[1] Prepared by Shuang Ding and Dmitriy Kovtun.

machinery investment accounted for nearly all of Japan's extraordinary growth performance, and developing countries benefited as much as richer economies from the technologies embodied in machinery.

- Gutiérrez (2005) found that investment in machinery was significant as a factor explaining per capita GDP growth in Latin America during 1960-2002, while investment in structures played a non-significant role.

- Jalilian and Odedokun (2000) found that machinery investment to GDP ratio had a positive effect on economic growth, and residential investment to GDP ratio did not appear to have any effect on growth.

3. **Machinery investment is considered growth-enhancing owing to its technology content.** Investment in machinery has been seen as a means of acquisition and transmission of technological improvements, and has been stressed as an important engine for productivity growth. Greenwood *et al*. (1997), for example, found a significant positive correlation between embodied technological progress and investment in machinery. The regressions conducted by De Long and Summers (1993) suggested that one percentage point increase in the machinery investment share of GDP was associated with an increase of approximately 0.2 percentage point per year in the TFP. Building structures, on the other hand, is less effective in promoting growth because the technologies embodied in construction have lower potential of being transmitted across the production process. In addition, the output of the construction sector is mostly non-tradable and technologically less advanced.

4. **However, there is evidence that investment in structures can boost growth in the short-run.** Zandi (2008) estimated that infrastructure spending by the government had a one-year fiscal multiplier of 1.6.[3] Therefore, structure investment can be more effective in pulling an economy out of recession.

5. **Housing improvement has been considered as a by-product of economic growth.** Many researchers viewed housing investment as a social expenditure that can be postponed until late stages of social development. Some economists have maintained that subsidizing housing investment leads to a serious misallocation of capital (Mills, 1987). Some countries, such as China and South Korea, in their early stage of development, considered housing as an industry producing lower returns compared with manufacturing and infrastructure, and discouraged investment in housing (Shen and Liu, 2004; Kim, 2004).

---

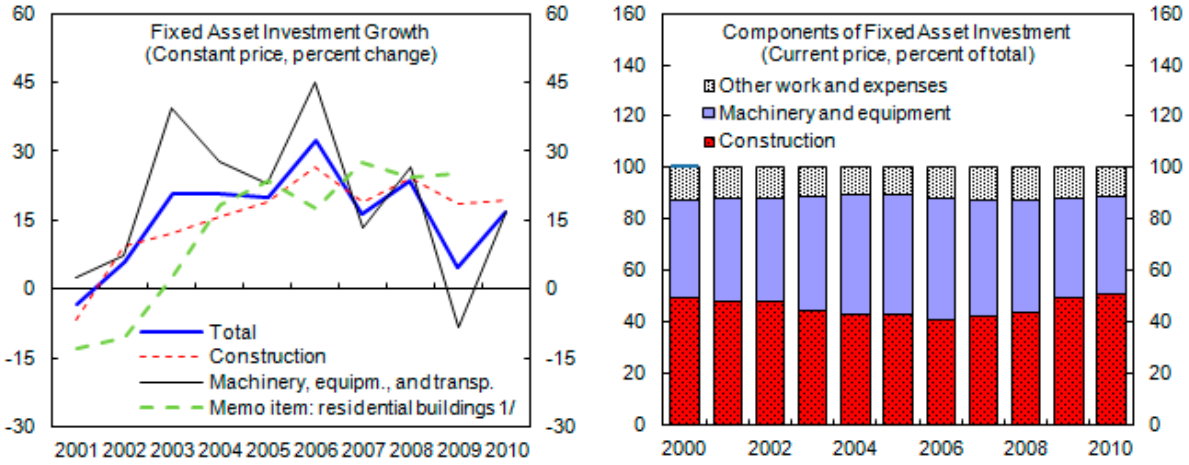
[2] They also believed that previous studies had been carried out at an inappropriate level of aggregation by focusing on total capital accumulation, which tended to understate the potential contribution of machinery investment to growth.

[3] Fiscal multiplier is the ratio of a change in output to an exogenous change in the fiscal deficit with respect to their respective baselines.

B. Investment Activity in Belarus and Economic Implications

6. **Investment has been a main driver of the economy in the decade before the recent global crisis** (IMF, 2010). Based on the production function approach, Belarus achieved an average growth rate of 8.3 percent during 2001-08, of which the growth of capital stock—supported by high investment-to-GDP ratios—explained about 70 percent. Investment growth during that period was made possible by abundant external financing and energy subsidies from Russia.

7. **More recently, investment in structures has tended to crowd out investment in machinery.** Prior to 2006, investment in machinery and equipment grew faster than construction investment. But since 2007, investment has been skewed toward structures, and machinery investment even declined in real terms in 2009, the first time in the decade. As a result, the share of construction and installation work in total fixed asset investment has surged by about 10 percentage points since 2006—largely mirroring rising share of residential buildings, matched by a decline in the share of machinery investment.[4]



Sources: National Committee of Statistics; and IMF staff estimates and calculations.
1/ Including not only construction and installation works but also related machinery and equipment.

8. **Construction-related investment has been expanding rapidly due to the government residential housing program.** Development of the construction sector and residential construction in particular, was one of the priorities in the Program for Social and Economic Development for 2006-10 (the "five-year plan"). During the period from 2005 to 2009, the authorities targeted 11-12 percent growth in residential construction, and the target for 2010 was even more ambitious, implying some 20 percent increase (Figure 1).

[4] It is well known that investment in infrastructure can promote long-term growth by allowing a more efficient use of conventional productive inputs, thus raising total factor productivity. However, disaggregated data on investment in structures are not available.

Residential housing is likely to remain one of the top priorities for 2011-15, as the draft five-year plan for this period envisages a 60 percent increase in total construction volume compared with the 2006-10 plan. Therefore, the government housing program is more than a short-term response to offset the drag on growth caused by the global economic crisis, but represents the government's objective to bring the housing conditions of citizens to European standards by tapping all sources of funding.

9. **Government has significant control over both the supply and demand side of the residential housing sector.**

- On the supply side, construction activity is dominated by state-owned companies, and the aggregate targets appear to have been followed closely—during 2006-09, actual outcomes were within 1.5 percent of the targets. Apartment prices in the primary market covered by the government housing program are indirectly controlled via caps on profit margins.

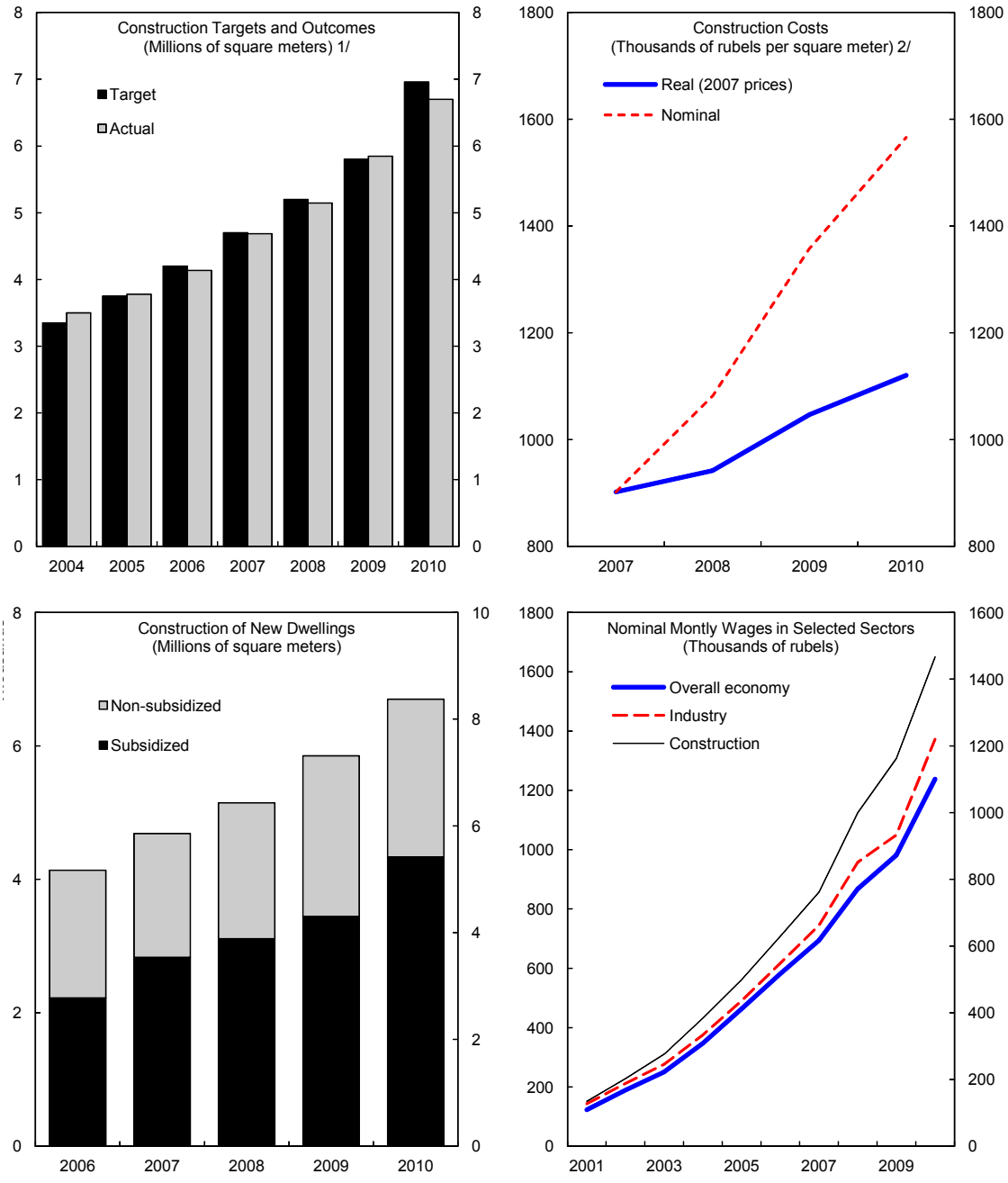
- On the demand side, government exerts influence on financing of housing by various subsidies aimed at increasing affordability. During 2006-09, 60 percent of newly constructed residential housing was acquired by households relying on some form of subsidies and this ratio grew to nearly two-thirds in 2010. The bulk of the support is provided via interest subsidies on housing loans, while certain groups of households have access to grants.[5]

10. **Excessive investment in residential housing has short-term and long-term consequences**:

- Housing construction is labor intensive and therefore helps create employment. At the same time, the construction activity boosts demand for goods and services produced by its upstream and downstream industries. Given its high multiplier effect, investment in housing can be very effective in supporting growth in the short term. However, Belarus's experience shows that excessive domestic demand created by housing investment can lead to a deterioration of the trade balance, even though the import content of construction itself is believed to be low.

[5] A detailed account of the subsidy schemes is presented in United Nations (2008).

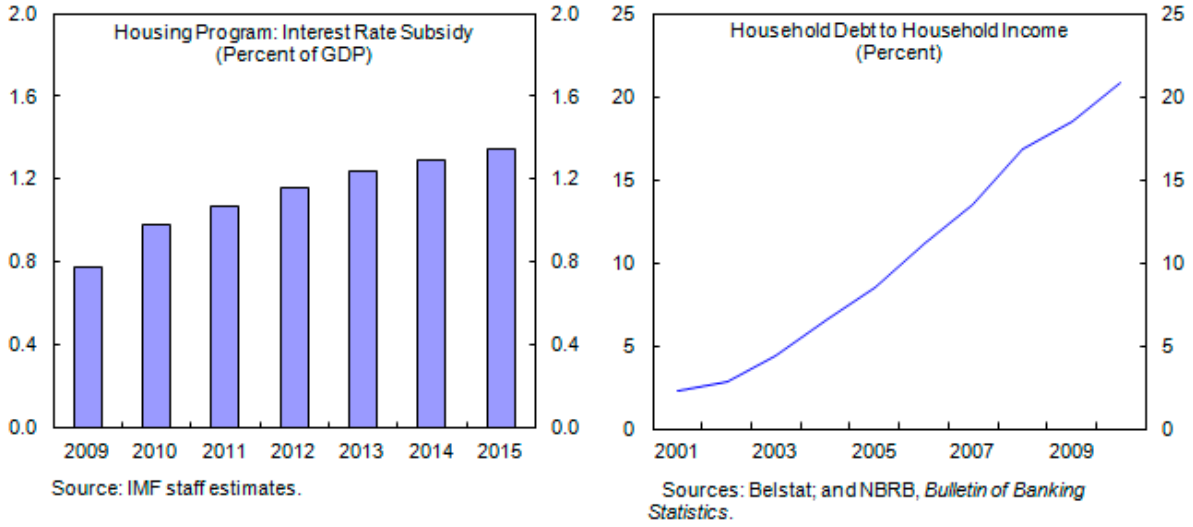
Figure 1. Belarus: Construction Sector Indicators, 2001–10



Sources: Belstat; and IMF staff calculations.
1/ Targets for 2004 and 2005 were obtained as mid-points of the targeted range.
2/ Approximated by the average cost of construction for households from the waiting list.

- In the longer term, based on experience in other countries, excessive investment in residential housing to the sacrifice of investment in machinery and infrastructure will likely impede the adoption of new technology and undercut productivity growth, hamper the government efforts to develop the export-oriented sectors, and weaken the country's long-term growth potential.

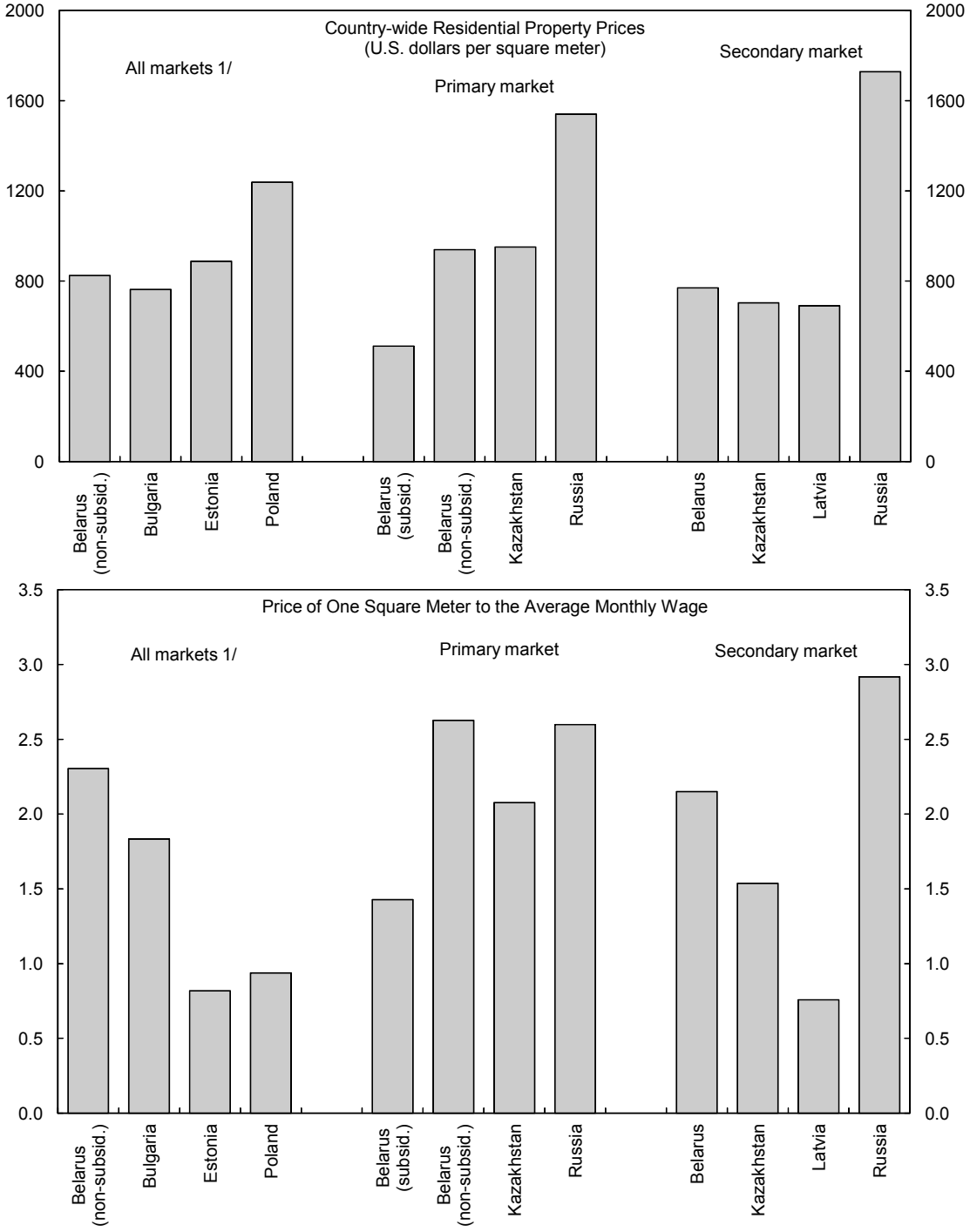
11. **The expanding government housing program also creates fiscal vulnerabilities, although the risk of a property market collapse is small.** Overwhelming dependence of the housing sector on government subsidies creates a significant long-term claim on the budget and reduces incentives for developing market-based house financing. A rough estimation of interest rate subsidies based on the likely trajectory of the stock of subsidized housing loans driven by construction targets specified in the draft program for 2011-15 suggests that these subsidies could expand to 1.3 percent of GDP in the medium term. Despite significant subsidization of the housing sector, chances of a real estate market crash of the type observed in many market economies are limited because housing affordability indicators as well as household debt-to-income ratio appear to be manageable (Figure 2). At the same time, the fast increase in the debt-to-income ratio of households is a source for concern as a fall in housing prices could produce stronger effects on the economy if this ratio increases further.



Source: IMF staff estimates.

Sources: Belstat; and NBRB, *Bulletin of Banking Statistics*.

Figure 2. Belarus: Cross-Country Housing Market Indicators, 2009



Sources: Belarus National Cadastre Agency; national authorities; BIS; Haver; and IMF staff estimates.
1/ Values for Poland are as of 2008.

C. Policy Recommendations

12. **The need of external adjustment and external financing constraints suggest future growth will have to rely more on productivity growth and less on investment.** Belarus's external current account deteriorated to an estimated deficit of 16 percent of GDP in 2010, and is not expected to improve much in 2011, which is symptomatic of a growth model relying on external resources to finance domestic investment. In the post-crisis era, external financing is expected to be less available and more costly, and implicit energy subsidies from Russia are being phased out. The new reality indicates that Belarus needs to find ways to improve productivity to sustain growth and boost exports to reduce external imbalances.

13. **Given the importance of machinery investment in upgrading technology and increasing productivity, Belarus needs to create conditions to shift the balance of investment in favor of machinery.** De Long and Summers (1993) believed that policy to boost machinery investment above what might be thought of as laissez-faire levels (i.e., pushing the real relative price of machinery below what might be thought of as its laissez-faire value) might produce large economic growth benefit. Machinery investment, especially in the tradable sectors, can also help promote exports and reduce trade deficits in the longer term. However, to be effective, machinery investment needs to be channeled to productive uses, and policies to support machinery investment must be market conforming, not market replacing. Therefore, market mechanisms should be employed to direct capital to projects with high returns.

14. **Tax policy can play an important role in facilitating higher investment in machinery.** The government is encouraged to streamline the business income taxation, with a profit tax levied at an internationally competitive rate, combined with a favorable treatment of investment, including more generous depreciation provisions to bring depreciation rules in line with international standards on economic life of assets.

15. **More importantly, the scale of the government housing program needs to be brought down to a sustainable level.** This could be achieved by (i) reducing reliance on quantitative targeting in housing construction, (ii) scaling down the size of subsidies provided by the housing program, and (iii) increasing the role of market forces in house financing and the construction sector.

16. **The pace of cutting the government housing program needs to be carefully considered to minimize possible negative impacts.** The following factors need to be taken into account:

- **A sharp reduction in housing investment can lead to a significant slowdown of economic activity.** An unwinding of the government housing program would reduce

construction activity significantly as construction in the subsidized market is linked to the availability of government support. The economy will suffer from the multiplicative effect from a contraction of construction, leading to quick deceleration of growth in the short term. Reducing the size of the construction sector would lead to an oversupply of construction workers who may not be absorbed quickly by other sectors.

- **A sharp reduction in the housing program could also affect property prices, household balance sheets, and banks' assets quality, although segmentation of the property markets is likely to make the impact limited.** Given that apartment prices in the subsidized part of the primary market are based on the cost of construction and the apartments are mostly owner-occupied, scaling down of the housing program may not produce a downward correction in prices, especially because both the demand and supply in that market are likely to fall. The excess capacity of the construction companies may put pressure on the price of apartments in the "commercial" segment of the primary market, and in turn affect the secondary market. Property prices in that segment may decline, weakening balance sheets of the wealthy, although that effect could be contained by the small size of the secondary market. The overall impact on banks' asset quality may be limited as payment discipline is strictly enforced. This, however, might change if there is a significant deterioration in credit culture.

17. **Therefore, the preferred approach is to steadily unwind the government housing program and the related subsidies, and take prompt measures to develop market-based mortgages**. This approach would avoid sharp swings in construction activity, give the construction companies sufficient time to adjust their capacity, and allow excess labor from the construction sector to be absorbed by other sectors. It should be noted, however, that the need for macroeconomic adjustment may necessitate a more rapid change. Developing market-based financing could be facilitated by addressing two present challenges: (i) the difficulty of enforcing creditors' rights to the property in case of delinquencies; and (ii) absence of secondary market for mortgages. The first challenge has a priority as it is distortionary—the recent steps taken by the authorities to address this challenge by revising the Housing Code are welcome.

REFERENCES

De Long, B., and Summers, L., 1991, "Equipment Investment and Economic Growth", The Quarterly Journal of Economics, Vol. 106, No. 2, pp. 445-502.

_____, 1993, "How Strongly Do Developing Economies Benefit From Equipment Investment?", Journal of Monetary Economics No. 32, pp. 395-415.

Greenwood, J., Hercowitz, Z. and Krusell, P., 1997, "Long-Run Implications of Investment-Specific Technological Change", American Economic Review, Vol. 87, No. 3, pp. 342-362.

Gutiérrez, M., 2005, "Economic Growth in Latin America: the Role of Investment and Other Growth Sources", UN CEPAL, SERIE Macroeconomía del desarrollo, No. 36.

IMF, 2010, Sources of Recent Growth and Prospects for Future Growth, Republic of Belarus—Selected Issues, Country Report No. 10/16).

Jalilian H., and Odedokun, M., 2000, "Equipment and Non-Equipment Private Investment: A Generalized Solow Model", Applied Economics, 32, pp. 289-296.

Kim, K.H., 2004, "Housing and the Korean Economy", Journal of Housing Economics, 13: 321-341.

Mills E., 1987, "Dividing Up the Investment Pie: Have We Overinvested in Housing?" Business Review/Federal Reserve Bank of Philadelphia, March/April 1987.

Solow, R., 1956, "A Contribution to the Theory of Economic Growth", Quarterly Journal of Economics No. 70, February.

Romer, P., 1986, "Increasing Returns and Long Run Growth", Journal of Political Economy, XCIV, October, pp. 1002-37.

Shen Y. and Liu H.Y., 2004, "The Relationship between Housing Investment and GDP in China", Journal of Tsinghua University Science and Technology (in Chinese), Vol. 9.

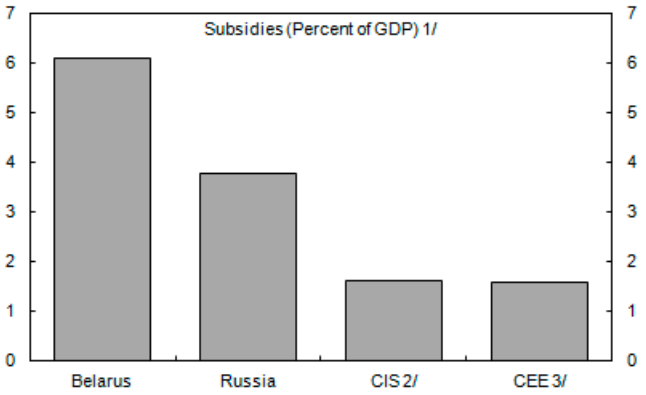
United Nations, 2008, "Country Profiles on the Housing Sector: Belarus", available electronically via http://www.unece.org/hlm/prgm/cph/countries/belarus/welcome.htm

Zandi, 2008, Testimony before the U.S. House Committee on Small Business, July 24, 2008.

III. Purpose and Scope of Government Provided Subsidies to Households[1]

Belarus devotes an extraordinary amount of government money to subsidies, but there are ample margins to reduce them while at the same time protecting the poor and low income families. Subsidies are used to sustain family income, to subsidize the cost of housing and utilities, transportation, and food. They are used to support specific productive sectors, as agriculture and construction. Some of these programs, however, are poorly targeted and therefore tend to be very expensive for the budget as they provide support across the entire income distribution. This paper uses the 2009 Belarus Household Survey and budget information to show how a large share of subsidies tends to accrue to higher income households. It argues that substantial savings can be achieved by better targeting these programs.

1. **Belarus spends about 14 percent of GDP in publicly provided subsidies.** Subsidies take the form of direct transfers to households (for families with children, to special groups and scholarships) or indirect transfers, where the cost of certain goods and services is maintained at a desired low level using budget resources. Examples of the latter include subsidized utilities and public transportation, subsidized loans for housing purchases and construction, reduced VAT on food, and tax exemptions on utilities and housing construction. Indirect subsidies include also support granted to specific economic sectors, in particular construction and agriculture. Belarus provides a higher level of subsidies compared to peers (see figure). For comparability the figure uses a definition of subsidies restricted to direct transfers to enterprises, thus the lower level shown for Belarus compared to the numbers in the text.



Sources: IMF, *Government Finance Statistics*; IMF, *International Financial Statistics*; and IMF staff calculations.
1/ Housing contstuction subsidies, part of agricultural subsidies and tax advantages (about 6 percent of GDP for Belarus) are not included in this definition of subsidies.
2/ CIS includes Armenia, Moldova, Kyrgyz Republic, Ukraine, Russia.
3/ CEE includes Bosnia and Herzegovina, Bulgaria, Croatia, Czech Rep., Estonia, Hungary, Latvia, Lithuania, Macedonia, Poland, Serbia, Slovak Rep., and Turkey.

[1] Prepared by Lorenzo Forni and Eliza Lis.

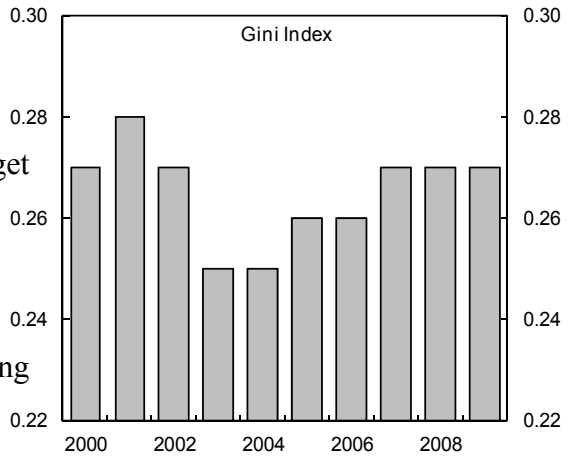
Cost of Main Subsidy Programs, 2009

(Percent of GDP)

Main Subsidy Programs	
Utilities	1.4
Transportation	0.4
Housing construction	2.5
Subsidies to the agricultural sector	3.7
Tax advantages	2.1
Value-added tax	0.6
Reduced VAT rate on food	0.1
Exemptions on utlilities	0.1
Exemptions on housing construction	0.4
Exemptions of social contributions and benefits	0.8
Profit tax exemptions for modernization	0.4
Tax deduction on personal income tax (PIT)	0.1
Other exceptional tax exemptions	0.3
Other	4.2
Total	14.2

Sources: Belarusian authorities; and IMF staff estimates.

2. Income inequality is low by international standards, but it has not improved in the last few years. Measured on the basis of the Gini coefficient (a widely used measure of inequality) Belarus is characterized by lower inequality compared to peers mainly achieved through strong GDP growth prior to 2009 and the redistribution policies implemented by the state.[1] Reflecting the authorities' inclination for large budget support to families and firms, spending on subsidies increased rapidly over the last few years (from 9 percent of GDP in 2005 to about 12 percent in 2009[2]). While over this period absolute poverty has halved, this has mainly reflected strong growth. Moreover, income inequality has not decreased in the last few years (see figure) and about 5 percent of the population still live below the poverty line.



Sources: Belarusian National Statistical Council; and IMF staff estimates.

3. **The paper draws on the 2009 Belarus Household Survey and budget information to estimate the impact of subsidies on poverty and the income distribution.** The Survey contains information at the household level on income sources (including direct subsidies) and

[1] Available data for 2007 show a Gini coefficient of 0.44 in Russia, 0.31 in Kazakhstan and 0.28 in Ukraine.

[2] Subsidies financed directly by the budget are about 12 percent of GDP. Off-budget subsidies are estimated at about 2 percent of GDP. The latter include subsidized credit to enterprises channeled by the National Bank of the Republic of Belarus (NBRB) through state-owned banks, administrative prices on a large set of goods and services that are well below market prices, tax incentives, and other cross-subsidy schemes.

consumption expenditures. On the basis of this information the paper estimates the direct and indirect subsidies received by each household and the impact of the different programs on the income distribution (see Appendix 1 and 2 for details).

4. **This analysis focuses on subsidies which can be observed in the Household Survey.** These include about half of total subsidies, accounting for about 8 percent of GDP. The analysis does not include subsidies (typically tax exemptions and advantages) directed to productive activities which are not observed in the Household Survey. The paper thus considers the following three groups of subsidies:

- Direct subsidies: child allowances, scholarships, privilege benefits and other subsidies.[3]
- Indirect subsidies (subsidies to providers, VAT reductions, subsidized loans for housing): for utilities, transportation, housing construction and food.
- Agricultural subsidies (mainly tax exemptions and direct subsidies): a wide range of incentives for agricultural companies and farmers.

We consider agricultural subsidies as a separate category for two reasons. First, the Household Survey does not report the amounts of direct subsidies received by individual farmers. Therefore we are forced to treat direct and indirect subsidies as a single category. Second, agricultural indirect subsidies, which are the biggest part of agricultural subsidies, support production while the other indirect subsidies considered in this paper are meant to reduce the cost of certain goods and services.

5. **Direct and indirect subsidies favor disproportionately higher income households.** Among direct subsidies, the only program where a bigger share of expenditure goes to lower income households is child allowances (Figure 1). Among the other ones considered, scholarships and other benefits are skewed to the top income quintiles, while privilege benefits tend to be rather uniform across the income distribution. Indirect subsidies reduce the price paid by households per unit of consumption. More well off households, which tend to consume more, therefore benefit disproportionately from these programs.[4] The top income quintile gets between 26 and 32 percent of overall subsidies for food, utilities and transportation, compared to between 11 and 14 percent for the lower quintile. The difference is even larger (43 compared to 6 percent) for housing construction subsidies (Figure 2), although for this item results are still preliminary.[5]

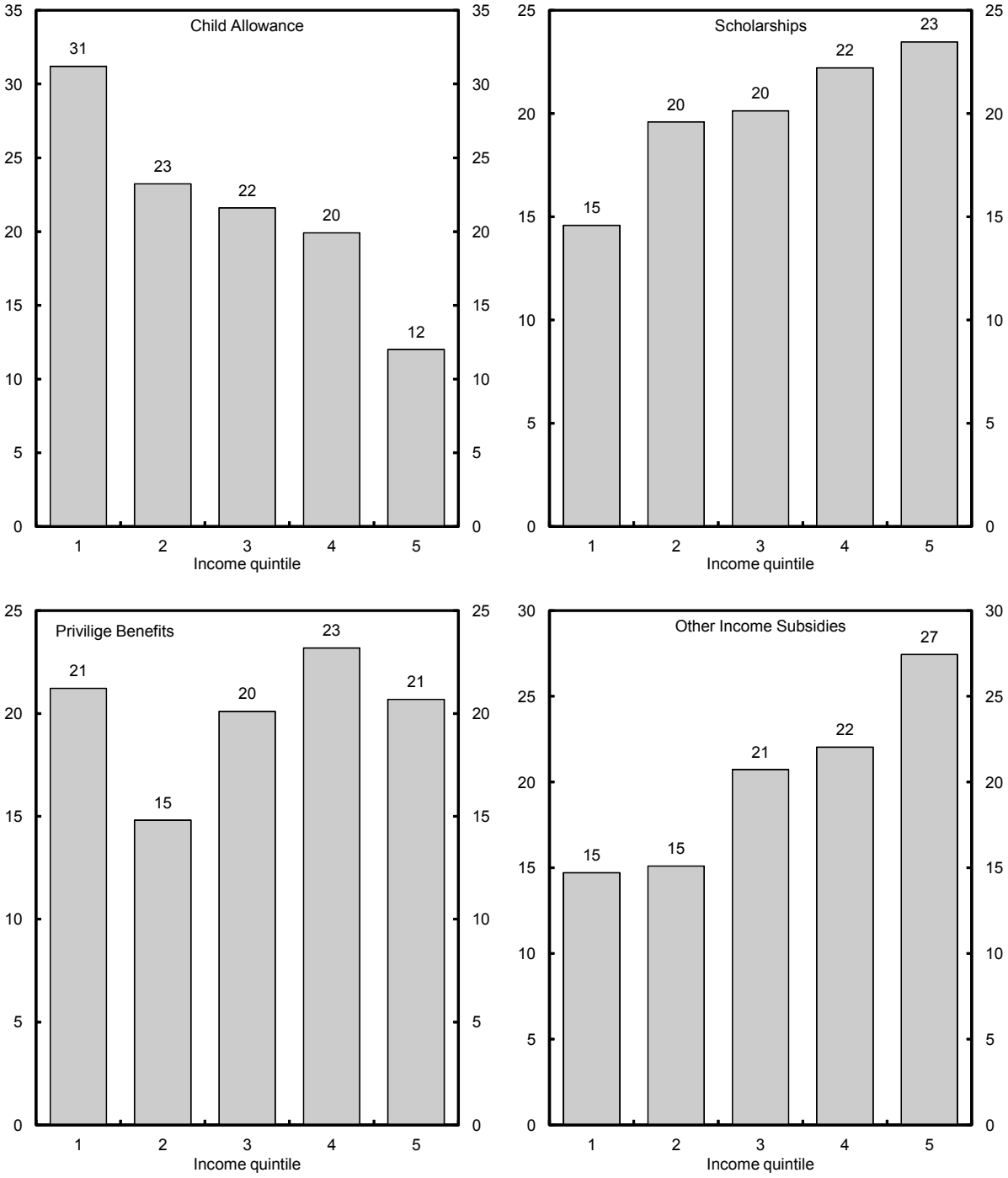
[3] Privilege benefits are granted with Presidential decree to special selected categories. Other subsidies include maternity benefits, allowances for taking care of disabled children or elderly.

[4] This result is confirmed also by looking at food prices in Belarus compared to European Union food prices (see Appendix 3). It emerges that food price controls tend to benefit high income households more than poor families.

[5] Housing construction subsidies include interest rate subsidies, quasi-fiscal interest rate subsidies, exemptions on housing construction and other subsidies for housing construction. It should be noted that the selected issue paper "Invest to Grow—More Buildings or More Machines?" refers only to direct interest rate subsidies.

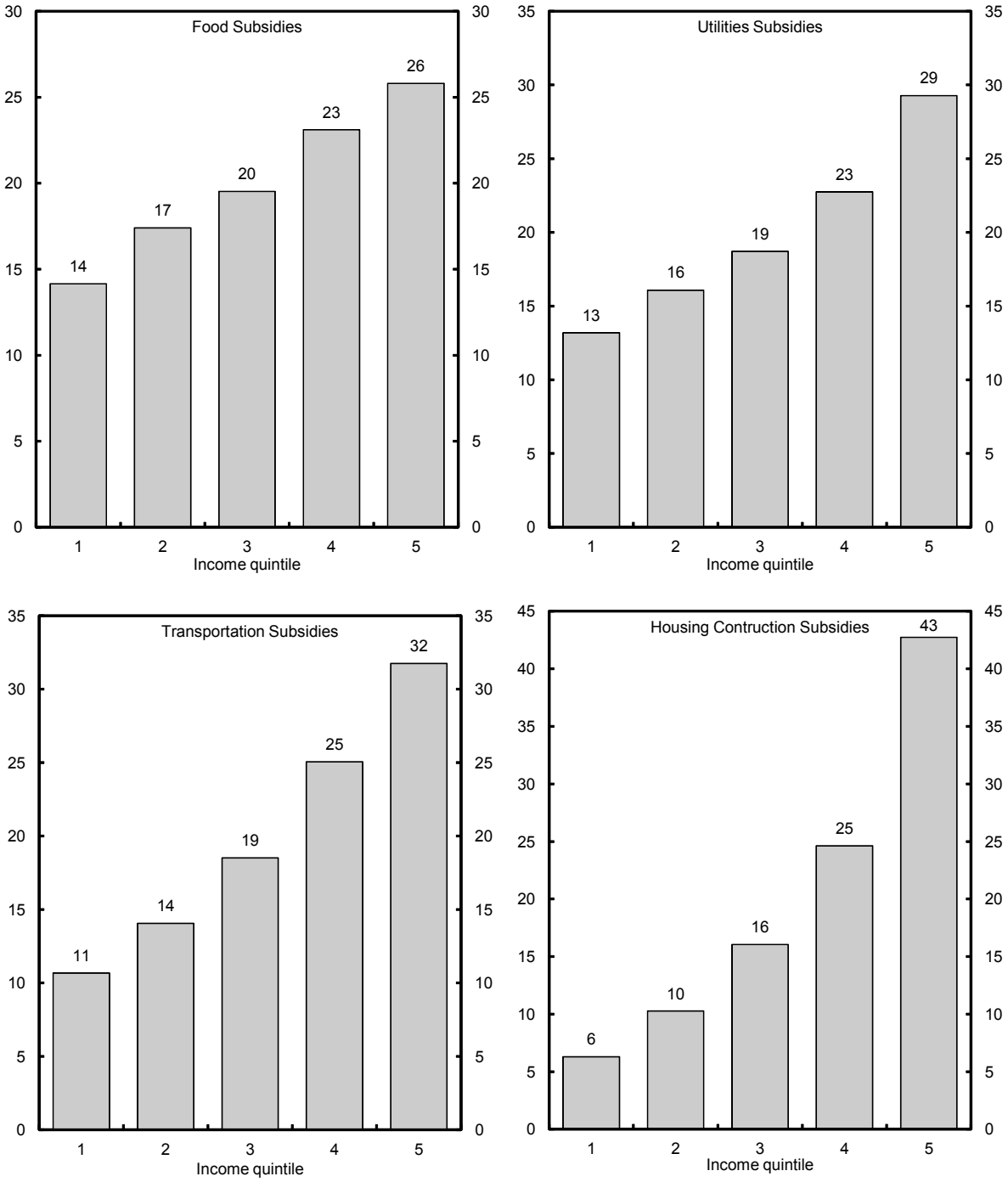
Housing construction subsidies have been allocated on the basis of purchasing and constructing housing reported in the Survey. No adjustment has been made to take into account the number of children, although there are housing programs targeted to young families and families with many children.

Figure 1. Belarus: Share of Direct Subsidies by Income Quintile, 2009



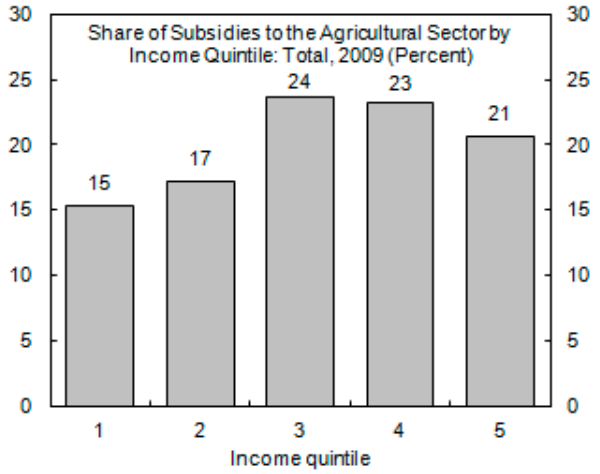
Sources: Belarusian authorities; and IMF staff estimates.

Figure 2. Belarus: Share of Indirect Subsidies by Income Quintile, 2009
(Percent)

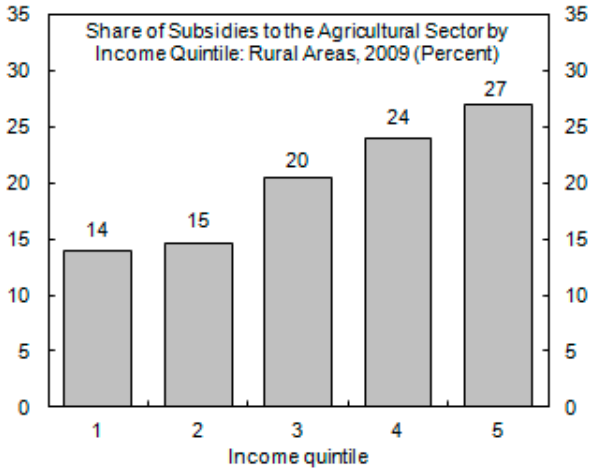


Sources: Belarusian authorities; and IMF staff estimates.

6. The large support to the agricultural sector also benefits mainly higher income households. Subsidies for agriculture directed at households are about 1.6 percent of GDP (another 2.1 percent is for large farms). They take various forms (mainly direct subsidies and tax exemptions) and are provided by the Republican budget, local authorities and the Fund to support agricultural producers and agrarian science (FSAPAS). Subsidies in this category were allocated to individual households on the basis of their agricultural production and income. The three top income quintiles receive almost 70 percent of subsidies, while the lower two receive about 30 percent (see figure, left panel). When we restrict the sample to households living in rural areas, the concentration of the benefits toward higher income quintiles becomes even more evident (figure, right panel).

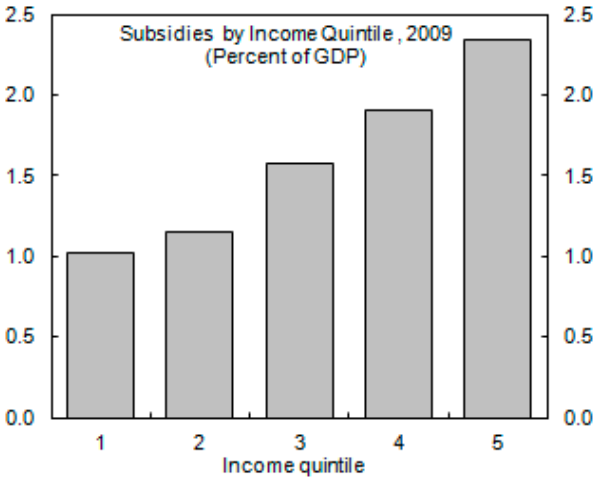


Sources: Belarusian authorities; and IMF staff estimates.



Sources: Belarusian authorities; and IMF staff estimates.

7. **Overall the resources accruing to higher income households are more than two times those accruing to lower income ones.** If we lump together all subsidies considered in this paper and allocate the amount received (expressed as a share of GDP) to the different income quintiles, we obtain the figure below. It is striking that the top income quintile receives about 2.4 percent of GDP in subsidies, while the bottom quintile about 1 percent. Also the two top quintiles receive more than the three bottom ones. Moreover, this result does not depend on whether we consider households living in rural or urban areas. On the contrary benefits are even more skewed toward high incomes when we restrict the sample to

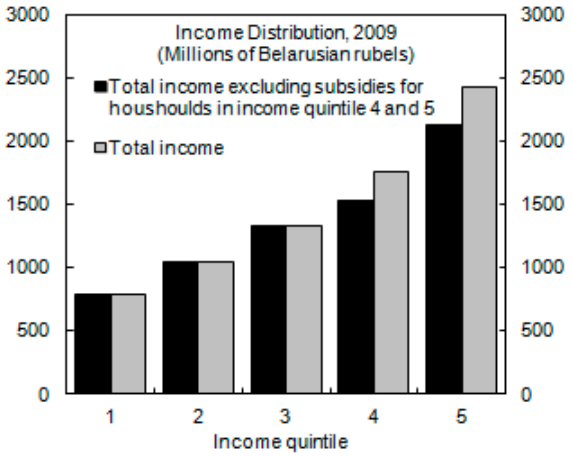


Sources: Belarusian authorities; and IMF staff estimates.

households living in rural areas. The reason is that food, utilities, transportation and housing construction subsidies are allocated on the basis of the same rules in rural and urban areas, but – as shown above – agricultural subsidies are very concentrated on higher income households in rural areas.

8. **Although the Household Survey refers to 2009, no significant reform occurred in 2010 or is expected in the near future.** As shown in this paper the most relevant programs are those for utilities, housing construction and for agricultural support. On utilities, authorities have recently raised household tariffs by about 9 percent. They noted that their plan to raise them further to reach 60 percent of cost recovery by 2015 could be slowed down by increases in gas prices, as the largest cost of utilities is related to heating. Agricultural subsidies should be reduced by about 10 percent in 2011, following a recent agreement within the newly established Custom Union with Russia and Kazakhstan. Expenditure for housing programs, on the other hand, will strictly depend on decisions regarding the level of lending under government programs. Other programs are more limited in amount and scope and some of them might not need to be reformed. This could be the case for example for the scholarship program, which is conditional on performance and not on income, although the fact that expenditure accrues mostly to top percentile households is somewhat concerning.

9. **Reforms going forward should consider reducing expenditure for subsidies.** As an example, if all subsidies (considered in this paper) to the top two income quintiles were eliminated, the income distribution would improve by about 2 percentage points and the budget would save about 4.2 percent of GDP. [1] Poverty could be completely eliminated, as it would cost only about 0.3 percent of GDP to bring up families that live below the poverty line to a level above the line. The figure at right shows how the income distribution would change. More systematically, the tables below report the effects of eliminating subsidies to all but the first quintile (column 1), to all but the first two quintiles (column 2) and so on up to leaving out only the top income quintile (column 4).[8] Savings would range from 2 to 7 percent of GDP and the Gini coefficient would improve between 0.6 to 2 percentage points. [9]



Sources: Belarusian authorities; and IMF staff estimates.

[1] The improvement in the Gini index is calculated based on the household income data from the Household Survey.

[8] The tables cover only subsidies to households. They do not include subsidies and tax exemptions directed to productive activities.

Cost of Main Subsidy Programs Under Different Scenarios

(Percent of GDP)

Main Subsidy Programs	Subsidies to all quintiles	Subsidies to quintile 1	Subsidies to quintiles 1 and 2	Subsidies to quintiles 1, 2 and 3	Subsidies to quintiles 1, 2, 3 and 4
Utilities	1.45	0.19	0.42	0.70	1.03
Transportation	0.35	0.04	0.08	0.15	0.24
Housing construction	2.90	0.18	0.48	0.96	1.67
Agricultural sector	1.59	0.24	0.51	0.89	1.26
Reduced VAT rate on food	0.10	0.01	0.03	0.05	0.07
Child allowance	0.60	0.18	0.32	0.46	0.59
Scholarships	0.10	0.01	0.03	0.05	0.07
Privilige benefits	0.50	0.10	0.18	0.28	0.41
Other subsidies	0.40	0.06	0.12	0.21	0.31
Total	7.99	1.02	2.17	3.75	5.65

Sources: Belarusian authorities; and IMF staff estimates.

Gini Index Under Different Scenarios (Percentage point changes) 1/

Subsidies to quintile 1	Subsidies to quintiles 1 and 2	Subsidies to quintiles 1, 2 and 3	Subsidies to quintiles 1, 2, 3 and 4
-0.6	-1.5	-2.0	-1.6

Sources: Belarusian authorities; and IMF staff estimates.
1/ Negative values indicate an improvement in income ditribution.

10. **The analysis suggests that there are margins for reconsidering the way most of these programs are targeted.** Instead of providing large indirect benefits to the entire population, the authorities should consider supporting families in need with direct economic support. This would require increasing interest rates on subsidized loans to market levels, phasing out fuel subsidies and increasing tariffs for utilities and transportation to approach cost recovery levels, increase below market prices for food and moderate preferential tariffs. Access to below market rates and prices could then be allowed on the basis of family income levels. Also direct transfers (as child allowances and other transfers) could be means tested. This would achieve the combined goal of reducing budget expenditure for subsidies while at the same time improving support to the poor and low income families.[10]

11. **The authorities pointed to the difficulty of measuring accurately household income, but this is not a new problem and has already been addressed in other countries.** Around

[9] These exercises were designed in a simple way to avoid making choices on which subsidies to reduce, given the large variety of programs and the different purposes they want to achieve.

[10] The newly established Targeted Social Assistance program could be further expanded to increase the support for households in the poorest quintile.

the world there are many examples of social programs where resources are allocated using Proxy Means Testing (PMT).[11] PMT identifies key socio-economic characteristics (indicators) that are strongly correlated with household's economic welfare and uses statistical methods to determine a numerical weight to each characteristic. Based on that analysis a score is calculated for each household, which becomes eligible for the program if the score falls below a threshold (Coady et al, 2004). [12] Although statistical proxies for household's standard of living are not perfect, they would go a long way in channeling resources to the families that most need it instead of subsidizing at an equal rate the entire population, regardless of their economic condition.

[11] Countries, which apply PMT, are Latin American countries like Chile, Colombia and Mexico (Castaneda and Lindert, 2005).

[12] Indicators predicting whether a household is poor or not are usually obtained from household surveys and comprise the following dimensions: (1) household demographics and characteristics of household head (e.g. occupation and education); (2) ownership of easily verifiable assets; (3) housing size and quality, access to communication; (4) selected expenditure items (e.g. clothing) and (5) location variables (e.g. rural vs. urban).

Appendix 1 – Computing the Income Distribution in Belarus

The household survey considers over 5000 Belarusian households living in urban and rural areas in 2009. The household survey provides information on households' income source as well as their expenditure. The total income at the household level obtained from the Survey is adjusted to take into account the number of household members using a weighting scheme (children up to 18 years old count half) and economies of scale (i.e. dividing by a number smaller than the simple weighted sum of household members). Therefore, income per capita in the household is obtained dividing total household income by the following factor:

$$[1+(\text{number of adults} - 1 + \beta * \text{number of children})]^{\alpha}$$

where β is equal to 0.5 and α to 0.75 reflecting economies of scale (see Deaton and Zaidi, 2002, for the rationale behind this index).
The income distribution is then computed on the basis of income per capita in the household.

Appendix 2 – Estimating the Share of Indirect Subsidies Received by Each Household

The amount of implicit subsidies to households from subsidized prices on utilities, transportation, housing construction and food expenditure is calculated by taking the following steps:

1. Calculate the amount of total economy expenditure on utilities, transportation, housing construction and food expenditure by multiplying national account total consumption in 2009 with the Survey's share of the specific item to total consumption.
2. Compute an implicit subsidy rate by dividing the total budget cost to support utilities, transportation, housing construction and food to total household consumption for that item as obtained under point 1.
3. Multiply household's expenditure on utilities, transportation, housing construction and food expenditure by the specific implicit subsidy rate to obtain the amount of subsidies received for the mentioned items.

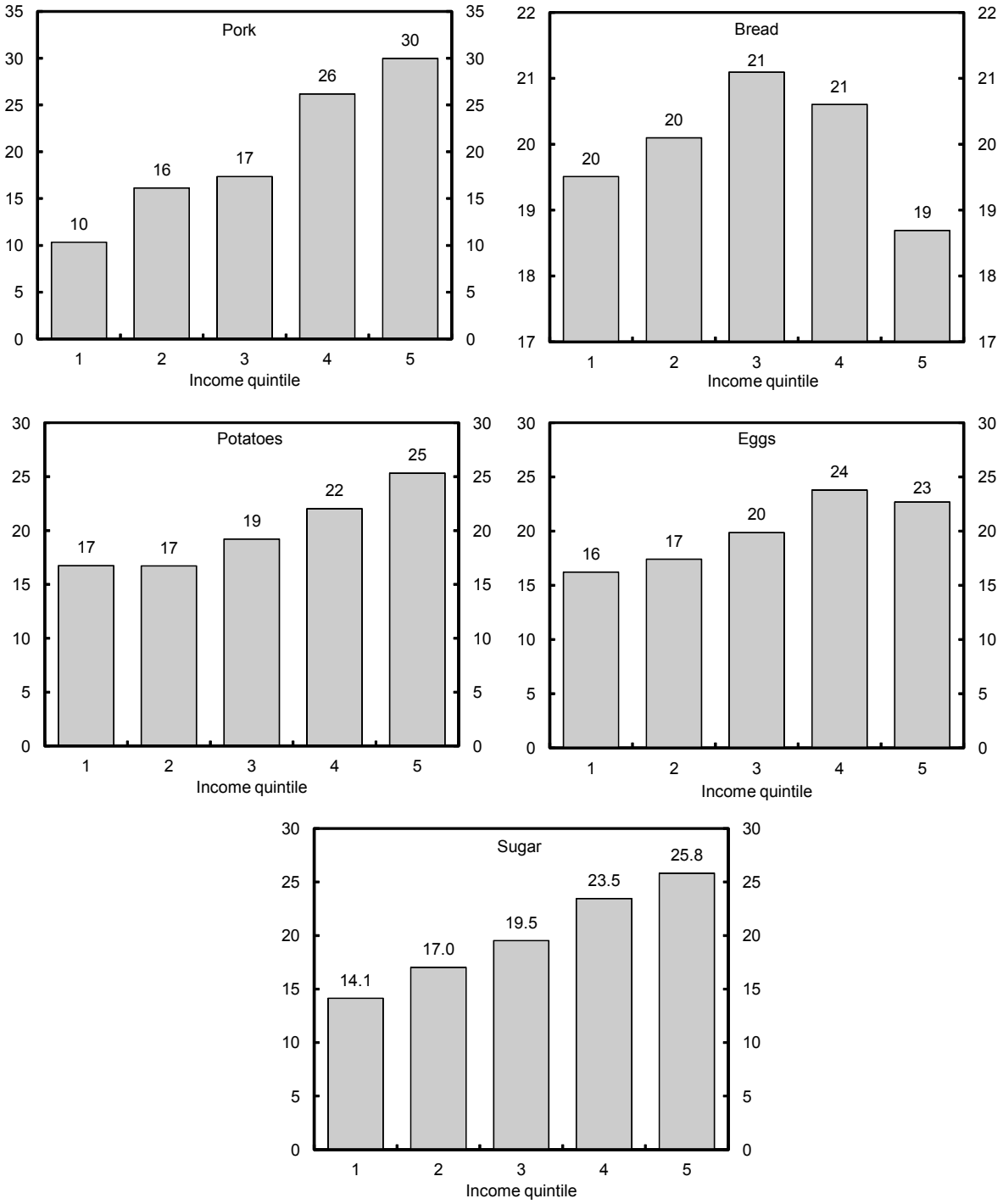
The underlying assumption is that subsidies are directly proportional to consumption. That is, for the items considered (utilities, transportation, housing, and food) the assumption is that the price paid by households does not depend on household income and also that there are not any consumption quotas or ceilings.

Appendix 3 – An Alternative Way to Look at Subsidies

An alternative way to estimate the impact of subsidies is to look at price levels in Belarus compared with other countries. Instead of relying on budget information to assess the size of subsidies, the implicit subsidy component was estimated relying on the price difference of Belarusian and European CPI items. Given data limitations this was possible only for food items. The impact of food price controls should be in any way interpreted with caution. Low food prices do not reflect solely subsidies to the agricultural sector, reduced VAT on food and indirect subsidies to other sectors, as machinery and transportation. They are affected also by different costs of production, mainly related to differences in wages. Therefore, the differential in price levels in Belarus with respect to the European Union does not capture only a wide range of public support to the economy. Still, it was estimated the implicit benefit for households due to the price differences of food items with respect to the levels prevailing in the European Union, under the assumption that the latter would reflect the prices that would prevail in Belarus absent the large support by the state. The estimated implicit benefit from the lower prices on household income accrues to a larger extent to higher income quintiles (see figure at right for the overall effect and Figure 3 for single important items), confirming the results obtained in the main text for food subsidies.

Sources: Belarusian authorities; and IMF staff estimates.

Figure 3. Belarus: Distributional Effect of Food Price Controls on Selected Food Items by Income Quintile, 2008 (Percent)



Sources: Belarusian authorities; and IMF staff estimates.

REFERENCES

Castaneda, T. and K. Lindert, 2005, "Designing and Implementing Household Targeting Systems: Lessons from Latin America and United States", Social Protection Discussion Paper Series No. 0526, World Bank.

Coady, David, Margaret Grosh, and John Hoddinott, 2004, "Targeting of Transfers in Developing Countries: Review of Lessons and Experience", World Bank, Regional and Sectoral Studies, World Bank.

Deaton, A. and S. Zaidi, 2002, "Guidelines for Constructing Consumption Aggregates For Welfare Analysis", Living Standards Measurement Study, Working Paper No. 135.