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INTERNATIONAL MONETARY FUND

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SELECTED ISSUES

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Approved By

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Prepared By Asmaa El-Ganainy and Nir Klein (both EUR), Eva Jenkner (FAD), Patrick Blagrave (RES), and Ceyda Oner (SPR)

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POTENTIAL OUTPUT GROWTH IN HUNGARY [1]

A.   Introduction

1.   **Hungary's growth performance weakened considerably in recent years.**
Following a period of rapid growth that averaged 4 percent in the ten years prior to the global financial crisis—which resulted in part from Hungary's increased integration into the German Central European Supply Chain (GCESC) and the related surge in investment and exports—the economy stagnated in 2007, and with the intensification of the global financial crisis, contracted substantially, by 6¾ percent in 2009. Since then, growth performance has been rather disappointing, and the economy slipped into a second recession in 2012. In 2013, the economy registered a modest recovery, but real GDP remained at about 5 percent below its pre-crisis level, lagging behind the performance of most regional peers, which are also heavily integrated into the GCESC.

Hungary. Real GDP growth, 1997-2013
(Percent)

Source: Haver.
1/ Peers include Czech Republic, Poland and Slovakia.

2.   **Against this background, this chapter aims to assess recent trends in Hungary's potential growth and medium-term growth prospects**. More specifically, the chapter addresses the following questions:

- To what extent does the recent moderation of GDP growth reflect structural factors?

- What would growth prospects over the medium-term be if recent trends were to continue?

- What are key reforms necessary to raise Hungary's potential growth, and what would be their impact on the real economy?

3.   **This chapter addresses these questions** by: (i) estimating Hungary's potential growth since the mid-1990s and identifying the contributing factors to the recent weak growth; (ii) forecasting potential output growth over the medium-term under current policies; and (iii) quantifying the impact of structural reforms on Hungary's potential growth employing a model-based approach.

4.   **The rest of the chapter is organized as follows**: Section B lays out some stylized facts about the Hungarian economy which could explain the growth slowdown observed in recent years. Section C provides estimates of potential growth using various methods, identifies the sources of
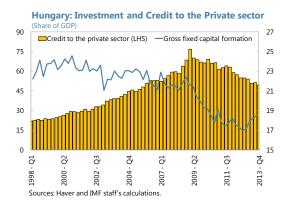
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[1] Prepared by Asmaa El-Ganainy and Nir Klein (both EUR), and Patrick Blagrave (RES).

the growth slowdown, and offers forecasts of potential growth over the medium-term under the baseline scenario. Section D employs a model-based approach to estimate potential growth over the medium-term under a reform scenario. Finally, section E concludes.

B.   Why Has Output Growth been Disappointing in Hungary?

5.   **Following its collapse in the aftermath of the global crisis, investment has recovered somewhat, but remains low**. In the ten years prior 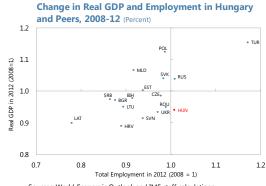to the crisis, the investment-to-GDP ratio averaged 23 percent, but in recent years it declined significantly reaching a record-low of 17 percent of GDP in 2012. This largely reflected the deleveraging process of the corporate and household sectors, the deterioration in the external environment and increased macroeconomic uncertainty, and the weakened business climate and institutional framework. The difficult operating environment for banks, owing in part to the heavy tax burden and high NPLs, and the sharp cross-border bank deleveraging also played an important role in limiting credit and investment. In 2013, investment recovered slightly, reaching 18 percent of GDP, largely on account of increased public investment co-financed with EU funds, the relaxation of the monetary policy stance, and the positive impact of the "Funding for Growth" Scheme (FGS), which provides subsidized lending to SMEs. Despite the recent moderate uptick, the investment ratio in Hungary remains low by historical standards and continues to lag behind regional peers.

Hungary: Investment and Credit to the Private sector (Share of GDP)

Sources: Haver and IMF staff's calculations.

6.   **Labor productivity lags behind regional peers and the gap has been widening since the crisis.** The loss of output in Hungary since 2008 was among the sharpest in the region, while employment remained broadly the same. This pattern, which points to a further deterioration in labor productivity, is also consistent with the decline in investment, capital stock, and total factor productivity (TFP). As potential growth depends on both the quality and the quantity of labor, low productivity, and weak labor market conditions—particularly if resulting in prolonged periods of unemployment—adversely affect the productive capacity of the economy and undermine potential growth, including through hysteresis effects (Blanchard et al. 2013).

Change in Real GDP and Employment in Hungary and Peers, 2008-12 (Percent)

Sources: World Economic Outlook and IMF staff calculations.

7.   **The still high levels of public and external debt continue to over burden the economy.** Hungary's public debt level is the highest in the region and, combined with the large financing needs, poses significant vulnerability. It could also impede growth through its potential adverse

impact on capital accumulation and TFP. This can
occur through a variety of channels, including higher
long-term interest rates (Baldacci and Kumar, 2010),
crowding-out of private investment, higher
distortionary taxation (Dotsey, 1994), greater
uncertainty about future policy decisions, and higher
vulnerability to crises.[2] High public debt is also likely
to constrain the scope for countercyclical fiscal
policies, which may result in higher output volatility

5-Year CDS Spreads: Hungary and Peers

Source: Bloomberg.

and further lower growth (Aghion and Kharroubi, 2007; and Woo, 2009). The risks associated with
high public debt are amplified by Hungary's high external debt and reflected in Hungary's risk
premia, which—although moderating recently—remains substantially above the pre-crisis levels and
has decoupled from those of its peers.
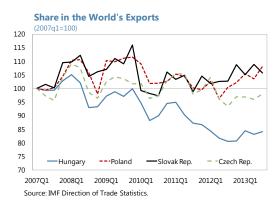
8.   **Moreover, difficult business climate, and weak policy and institutional frameworks are
weighing on competitiveness and competition, undermining productivity, confidence,
investment, and growth.**

-    **Competitiveness**. Compared to regional peers, Hungary's export performance was quite
     impressive until 2008, when annual export volume growth stood at an average of 13 percent—
     over-performing the regional average of
     10 percent.[3] Since then, export growth
     moderated significantly, averaging 3 percent
     during 2009–13, though it still remained a key
     contributor to Hungary's output growth.
     Hungary's eroding competitiveness has been
     reflected in its declining share in world exports
     and the widening gap in EU export market
     share between Hungary and its peers. Price
     indicators do not point to competitiveness

Share in the World's Exports
(2007q1=100)

Source: IMF Direction of Trade Statistics.

issues,[4] suggesting that non-price factors may explain such trends, including deterioration in the
business climate, high regulatory burden, and weaknesses in the institutional framework, (e.g.,
frequent and unpredictable changes in the policy framework and the tax system). Indeed,
Hungary's ranking in the global competitiveness index has fallen since 2010–11, with the weak
institutional framework being a drag on overall competitiveness.

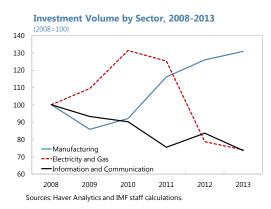[2] See Elmendorf and Mankiw (1999) for a comprehensive literature survey on the macroeconomic effects of public debt.
[3] See Box 4 of the Staff Report for the 2014 Article IV Consultation.
[4] See Staff Report for the 2014 Article IV Consultation.

- **Competition and investment in the product and services sectors.** Government interventionist policies, including frequent and unpredictable tax and regulatory changes, disproportionate tax burden on certain sectors, particularly with large foreign ownership (e.g., banking and energy sectors),[5] and distortive price regulations (e.g., in the energy sector),[6] could hamper competition with potential adverse effects on productivity and investment. Indeed, investment has fallen disproportionately in the sectors hit hardest by government's interventionist policies. In addition to their harmful growth effects, interventions in the energy sector through regulated prices could result in price distortions, with potential adverse effects on energy efficiency and quality (OECD, 2014).

Investment Volume by Sector, 2008-2013
(2008=100)

Sources: Haver Analytics and IMF staff calculations.

C. Potential Output Growth in a Baseline Scenario

9.   **A number of alternative estimation techniques are employed to assess the impact of the global financial crisis on Hungary's current and medium term potential growth.** The different approaches can be classified into some of the de-trending statistical methods, such as Hodrick-Prescott filter (HP), Baxter-King Band-Pass filter (BK), and the Unobserved Component method using Kalman filter (KF). The latter is also extended into a multivariate system that includes structural relationships between economic variables. A more structural approach for output gap estimation that is being used in this chapter is the Production Function method (PF). The main features of each methodology are described in Appendix I.

10.   **Estimation results point to a substantial deceleration of potential growth during the global financial crisis.** In the early 2000s potential growth hovered around 3½ percent. However, starting in 2007, all estimates indicate a substantial deceleration, which, apart from the PF estimation, turned negative at a later stage. Specifically, the HP

Hungary. Potential Growth Estimates
(Percent)

Source: IMF staff's calculations.

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[5] For instance, in the energy sector, the effective CIT rate can reach up to 50 percent (OECD, 2014).

[6] In 2010, the government imposed a temporary price freeze on energy prices. In 2013, regulated energy prices in electricity, gas, and district heating for households were cut by a total of 20 percent in two steps, and the cost has been borne by foreign energy providers. In 2014, another round of government-mandated reduction of energy prices for households was approved by the Parliament to take place in three steps (the price of natural gas was lowered by 6.5 percent as of April 1; whereas the price of electricity will drop by 5.7 percent as of September 1, and that of district heating by 3.3 percent as of October 1).

and BK estimations suggest a shift to negative growth rates in 2008, while the two specifications under the unobserved components method point to a shift to a negative territory in 2009 (KF2) and 2010 (KF1). The production function approach exhibits a smoother trajectory over time and, although decelerating sharply in 2006-09, potential growth rates remained positive. In 2013, the average potential growth was around zero, with three methodologies (PF, HP and BK), pointing to a positive rates (average ½ percent), while the two specifications under the unobserved components method still suggesting negative rates (-0.7 percent).

11.   **The production function approach suggests a deceleration of potential growth mainly due to TFP and capital stock.** Although the contribution of both capital and TFP to potential growth continued to be positive, it declined significantly since 2007. More specifically, the contribution of TFP moderated to an average of ½ percent per annum in 2007–13 from an average of about 2 percent in 2000–06, while the contribution of capital declined to an average of 0.4 percent in 2007–13 from 0.9 percent in 2000–06. The contribution of labor turned negative during 2005–12, but remained modest.

Contribution to Potential Output Growth
(Production Function Approach)

Source: IMF staff's calculations.

12.   **Going forward, potential output growth is projected to somewhat recover but remain subdued.** Using the IMF's World Economic Outlook (WEO) real GDP growth and investment projections, as well as the 10-year average annual growth of employment and hours per employee, the estimated potential growth by the five methodologies gradually increases over the medium term from zero in 2013 to about 1.2 percent in 2019 (on average). That said, the uncertainty regarding these estimations remains high as they vary in a relatively wide range between 1.7 percent (HP filter) and 0.9 percent (KF1).

Hungary. Potential Growth Estimates
(Average and range, Percent)

Source: IMF' staff's calculations.

13.   **Based on current policies, Hungary's medium term potential growth is expected to lag behind that of its peers.** Despite the modest economic recovery in 2013 and more favorable external conditions in 2014, Hungary's medium term growth prospects are projected to remain weak mainly on account of continued low investment and modest TFP growth. A shift to a higher growth

Potential Growth: Hungary and Peers over the Medium-term (Range and average, 2013-2019)

Source: IMF World Economic Outlook.

trajectory will necessitate the implementation of structural reforms to raise investment and productivity. As such, it would be important to change the policy direction with greater focus on removing structural impediments in the labor markets, boosting market confidence and investment by increasing policy predictability, and strengthening the business climate by reducing the regulatory and tax burdens.

D. Potential Output Growth in a Reform Scenario

14.   **A model-based approach is employed to assess the impact of structural reforms on Hungary's potential output over the medium-term.** We employ the Emerging Europe module of the IMF's Flexible System of Global Models (FSGM). The FSGM is a semi-structural, multi-region, general-equilibrium model. It contains some key elements, like private consumption and investment, which have solid micro-foundations, while other elements such as trade, labor supply and the Phillips curve have reduced-form representations. Aggregate supply in the model is based on an aggregate Cobb-Douglas production function. There is a full stock-flow consistency in the model, and agents use model-consistent expectations. Monetary and fiscal policies are endogenous and pinned down with simple rules.[7] The reforms under consideration are: (i) labor market reforms to increase labor participation rate; (ii) budget-neutral fiscal reforms to improve the quality of fiscal policy; and (iii) structural reforms to enhance the business environment. The impact of the full implementation of the reform package on key variables is depicted as deviations from the baseline scenario in Figure 1. Specifically:

-    **Labor market reforms to increase labor force participation.** While the labor participation rate increased in recent years—reaching 65 percent in 2013 (up from 61½ percent in 2008), owing in part to a number of important labor market reforms since 2009[8]—it remains well below the EU average of 72 percent. The reform scenario assumes an increase in labor participation rate to the EU average. This layer of the scenario is phased in gradually over the course of twelve years in equal installments, which amounts to an increase in the participation rate of about 0.6 percentage point per year.[9] We also assume that all of the additional labor that is supplied over this adjustment period is employed, which fosters stronger consumption activity as a result of higher aggregate disposable income. In addition, this influx of labor encourages firms to add capital, since the marginal product of that capital is now higher, so investment activity is increased as a result of the shock as well. Both of these factors boost the productive capacity of the economy. Since the increase in potential output allows all goods to be produced more cheaply, Hungary's real exchange rate will depreciate, thereby encouraging export growth and reducing imports. There is no appreciable impact on the government's

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[7] See Appendix II for more details about the FGSM.

[8] See Chapter III for more details on Hungary's recent labor market trends, reforms, and policies.

[9] When considered in the context of recent history, this speed of adjustment seems reasonable, as the activity rate increased at roughly this pace during 2009–12.

budget as a result of the increase in labor force participation, but the debt-to-GDP ratio falls as a result of stronger output. Finally, there is also no appreciable output gap which results from this shock, but policy rates will tighten slightly so as to offset the effect of the exchange-rate depreciation on inflation. This opens up a small output gap after a few years, which helps to keep inflation anchored (Figure 1).

- **Budget-neutral fiscal reforms to improve the quality of fiscal policy.** This layer focuses on eliminating distortionary sectoral taxes[10] amounting to 2.3 percent of GDP, which would be fully financed by a permanent reduction in: (i) government consumption (e.g., the wage bill and spending on non-EU related goods and services) by 1 percent of GDP; and (ii) general transfer payments, (e.g., transport subsidies). Each of these policy changes are phased in over 3 years in equal increments. The primary benefit associated with this set of fiscal policy changes stems from lower capital taxes, which lowers the cost of capital, thereby encouraging investment, causing it to rise significantly relative to baseline. Given that stronger investment activity entails higher imports of investment goods, imports will increase relative to baseline, which results in some deterioration of the current account. The boost to investment also increases the financial wealth of households, which would tend to put upward pressure on consumption activity (Figure 1). However, in order to maintain a balanced budget, transfer payments fall as part of this layer of the scenario, which dominates the positive impetus to consumption from higher financial wealth, in the short run. On balance, the capital stock would be expected to rise significantly as a result of this set of fiscal policies, which would boost the economy's productive capacity.

- **Structural reforms to enhance the business environment.** This layer of the reform scenario assumes that policies are enacted to improve the business environment, including through enhancing the transparency of the policy framework, strengthening policy predictability, fostering competition, and reducing the regulatory burden and government interventionist policies. These policies would reduce investor uncertainty and boost confidence. The policies are modeled by a permanent reduction of the sovereign's risk premium by 100 bps, which is phased-in in equal increments over a five-year time horizon. The magnitude of the shock was chosen because it is roughly half of the gap between risk premia in Hungary and its main regional peers. Much like the previous layer of the scenario, the main effect of the reduction in the risk premium is to reduce the cost of capital significantly, thereby encouraging investment activity. In addition, firms will hire labor (since the marginal product of labor is now higher) and there will be a positive wealth effect which will boost consumption. Higher consumption and investment relative to the baseline entail stronger imports, which cause a slight deterioration in

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[10] Sectoral taxes are levied in Hungary on a number of sectors, particularly those with relatively large foreign ownership, including, financial, energy, telecommunication, and retail sectors. Such taxes adversely affect growth through their negative effect on the business climate, foreign investment, bank lending, competition, and inefficient allocation of resources. Sectoral taxes are proxied in the model using capital taxes.
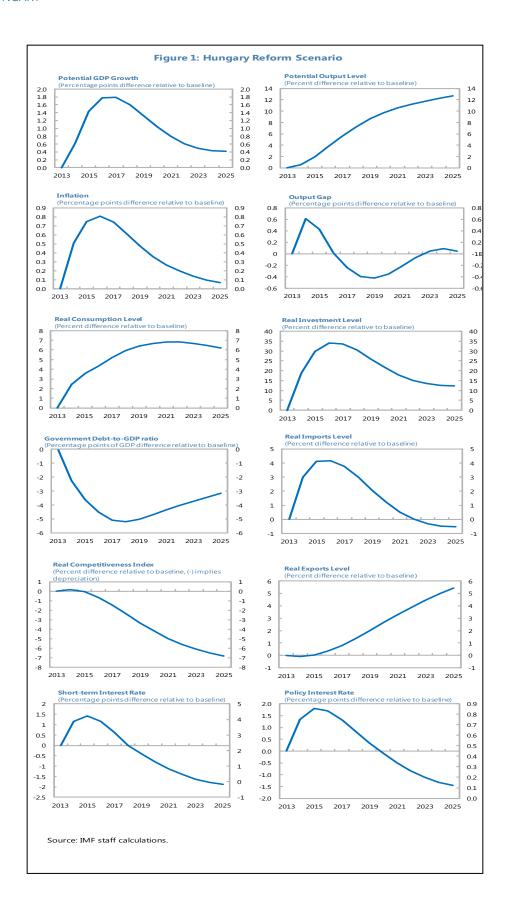
the current account. In the short run, stronger domestic activity leads to a positive output gap, as consumption and investment are pulled forward, given that the shock is permanent. This gives rise to slightly higher inflation, which necessitates higher policy rates to keep inflation expectations well-anchored (Figure 1).

15.   **On whole, these structural changes could boost Hungary's potential output level and growth rate significantly, largely through the investment and consumption channels.** Relative to the baseline scenario, investment, consumption, and potential output levels could be above the baseline trajectory by 12, 6, and 13 percent, respectively over the course of the next decade or so—supported by (i) the increase in human wealth on the back of higher labor participation rate; (ii) the increase in financial wealth, on the back of increased investment activity, owing to lower cost of capital, as sectoral taxes are eliminated, and the sovereign's risk premium is reduced (Figure 1). Over the medium-term, potential output growth could reach its pre-crisis rates, and, as the economy catches up in the longer term, potential growth decelerates and converges to that of the advanced economies (Figure 1).

E.   Summary and Conclusions

16.   **Hungary's growth performance has been weak in recent years.** Following robust growth in the decade that preceded the financial crisis, economic activity moderated considerably in 2007–08, and contracted sharply in 2009. The inventible external and domestic adjustment that took place since the onset of the crisis, alongside the deterioration in the operating environment for banks, the erosion of competitiveness, and weakened business climate, in part due to the government's interventionist policies, have undermined investment and productivity, and contributed to a substantial moderation of potential growth.

17.   **Based on current policies, the medium term growth prospects—although somewhat improving—remain subdued and below that of Hungary's peers.** While the drag from the private sector's deleveraging is projected to gradually diminish over the medium term, policy unpredictability and persistent interventionist government policies are likely to continue depress private investment. At the same time, labor market performance, while gradually improving, is held back by the low participation rate, weak labor productivity, and skill mismatches. Although estimations are subject to high uncertainty, they suggest that, under current policies, potential output growth is likely to accelerate modestly to 0.9–1.7 percent in 2019 from just above zero in 2013.

18.   **Lifting Hungary's potential growth calls for an ambitious reform agenda.** Key elements of such a reform package should include (i) labor market reforms to increase labor participation rate; (ii) budget-neutral fiscal reforms to enhance the quality of fiscal policy that focuses on eliminating distortionary taxes; and (iii) structural reforms to improve the business environment, including by strengthening policy predictability, reducing the regulatory burden, and enhancing competition in the product and services markets.

19.   **Results of simulations using a model-based approach suggest that there are large gains in potential output associated with the full implementation of the reform policy package.** More specifically, and although estimates are inherently uncertain, model simulations suggest that under such a reform scenario, potential growth could return to its pre-crisis rates over the medium term.

Figure 1: Hungary Reform Scenario

Potential GDP Growth
(Percentage points difference relative to baseline)

Potential Output Level
(Percent difference relative to baseline)

Inflation
(Percentage points difference relative to baseline)

Output Gap
(Percentage points difference relative to baseline)

Real Consumption Level
(Percent difference relative to baseline)

Real Investment Level
(Percent difference relative to baseline)

Government Debt-to-GDP ratio
(Percentage points of GDP difference relative to baseline)

Real Imports Level
(Percent difference relative to baseline)

Real Competitiveness Index
(Percent difference relative to baseline, (-) implies depreciation)

Real Exports Level
(Percent difference relative to baseline)

Short-term Interest Rate
(Percentage points difference relative to baseline)

Policy Interest Rate
(Percentage points difference relative to baseline)

Source: IMF staff calculations.

Appendix I. Review of Estimation Methods

The Hodrick-Prescott (HP) filter Overview

The Hodrick-Prescott filter (1997) is a simple smoothing procedure and one of the most common methods to estimate the potential output. The main assumption is that the potential output varies smoothly over time, and, as such, this method minimizes the gap between actual output (y) and potential output ($\hat{y}$) subject to a penalty that constrains the second difference of potential output, as follow:

$$Min \; \sum_{t=1}^{T}(y_t - \hat{y}_t)^2 + \lambda \sum_{t=2}^{T-1}[(\hat{y}_{t+1} - \hat{y}_t) - (\hat{y}_t - \hat{y}_{t-1})]^2 \qquad (1)$$

where λ determines the degree of smoothness of the trend. Following the standard practice for quarterly data, we adopt a smoothness parameter equal to 1,600. In addition, to avoid the end-sample bias, we extended the sample to 2019 using the April 2014 WEO real GDP growth forecast.

Baxter-King Band-Pass filter

Another univariate approach to filter a time series was developed by Baxter-King (1995). The advantage of this approach (compared to the Hodrick-Prescott filter) is that it isolates the cyclical component of a time series by specifying a range for its duration. Thus, the business cycles, and the high frequency components that reflect irregularities or seasonal effects do not affect the trajectory of potential output. The business cycle duration is set to last between 2 to 32 quarters, though other specifications were tested as well, yet they did not produce results that differed significantly.

Unobserved Component methods using Kalman filter

This methodology is commonly used to estimate the two unobserved components of GDP: the trend component (potential output) and its cyclical component (the output gap). It allows identifying unobserved variables by their link to observed variables and by their underlying statistical process. We follow Fuentes et al. (2007) and Magud and Medina (2011) with some modifications, and present two alternative models: (i) a univariate model that includes one signal equation, which is close in its characteristic to a Hodrick-Prescott filter though it allows a stochastic variation of potential output, and (ii) a multivariate filter that includes a Phillips curve.

Model 1(KF1)

The state space form of the univariate filter can be presented as follows:

$$y_t = \hat{y}_t + y_t^c \qquad (2)$$
$$\hat{y}_t = \hat{y}_{t-1} + g_{t-1} \qquad (3)$$

$$g_t = g_{t-1} + \varepsilon_t^g \qquad\qquad (4)$$
$$y_t^c = \theta y_{t-1}^c + \varepsilon_t^c \qquad \theta < 1 \qquad\qquad (5)$$

The variables y_t^c and g_t represent the cyclical component of y_t (the output gap) and the trend growth, respectively. ε_t^c and ε_t^g are residual terms of mean 0 and variances σ_c^2 and σ_g^2, respectively. The cyclical component of output follows an autoregressive process, and θ is lower than one to ensure a stationary process. The smoothness of the trend component is controlled by constraining the relative variance (σ_c^2/σ_g^2). The system can be estimated by Kalman filter, using eq. (2) as a signal equation and equations (3)-(5) as the transitional equations.

Model 2 (KF2)

In this model, we add a backward-looking Phillips curve as a second signal equation in the system presented above, which implies that inflation path is affected by past core inflation, as well as current and past output gaps, as follows:

$$\pi_t = \sum_{p=1}^{P} \alpha_p^\pi \pi_{t-p} + \sum_{q=1}^{Q} \alpha_q^y y_{t-q}^c + \varepsilon_t^\pi \qquad\qquad (6)$$

Where π_t is core inflation rate and ε_t^π is a white noise process of mean 0 and variance σ_π^2. The parameters p and q refer to the lags of inflation and output gap, respectively.

Production function

This approach assumes the output can be reflected by the following standard Cobb-Douglas production function:

$$Y_t = A_t K_t^{(1-\alpha)} (L_t H_t)^\alpha \qquad\qquad (7)$$

Where Y_t represents domestic output in period t, K_t the physical capital stock, L_t the employed labor force, H_t the hours worked per worker, and A_t total factor productivity (TFP). The labor share of output, α, is set to 0.64, consistent with the long-term average.

We use annual data from different sources. The number of employees and hours per worker is taken from the OECD; and real GDP is taken from WEO. The capital stock series is constructed with investment data from the Penn World Tables using the perpetual inventory method until 2010, and investment real growth from WEO for 2011–19 to calculate the capital stock. In particular, we assume that the economy is on a balanced growth path at time zero and compute the initial capital stock, K_0, according to the expression:

$$K_0 = \frac{I_0}{(1+g)(1+n)-(1-\delta)} \qquad (8)$$

where I_0 is the initial investment expenditure, g is the technological progress rate, n is the population growth rate, and δ is the rate of capital depreciation. Like Sosa et al. (2013), we assume that g is equal to 1.53 percent; δ is equal to 3.5 percent; and n is equal to the average annual growth of population (-0.08 percent).

Using Eq. (7) and Eq. (8), we can extract the TFP growth as follows (denoting $\hat{X}$ the growth rate of the variable X):

$$\hat{A} = \hat{Y} - \alpha\hat{L} - \alpha\hat{H} - (1 - \alpha)\hat{K} \quad (9)$$

Appendix II. Description of the Flexible System of Global Models (FSGM)

Overview

IMF's Flexible System of Global Models (FSGM) is a suite of several region-specific modules used for major IMF publications, such as the World Economic Outlook and the Spillover Report. Each of these modules features an identical economic structure, but differs in its coverage of countries in order to suit the needs of the IMF's area departments. The Emerging Europe module (EEUmod) used for the policy-reforms scenario considered in this chapter is one such module.

Although a complete exposition of the model is beyond the scope of this chapter, we present the key elements of the model, which are most relevant for this scenario (potential output, and investment behavior) below.

Aggregate Demand

Aggregate demand follows the standard national expenditure accounts identity, where GDP is the sum of household consumption, private business investment, government absorption and exports of goods and services, less imports of goods and services.

Private Consumption

The consumption block uses a discrete-time representation of the Blanchard-Weil-Yaari overlapping generations model (OLG), based on a constant-elasticity-of-substitution utility function containing only consumption. Using OLG households rather than the typical infinitely-lived households results in important non-Ricardian properties whereby the path for government debt has significant economic implications. Essentially the OLG framework means that households treat government bonds as wealth since there is a chance that the associated tax liabilities will fall due beyond their expected lifetimes. The OLG formulation results in the endogenous determination of national savings given the level of government debt. The world real interest rate adjusts to equilibrate the global supply of and demand for savings. The use of an OLG framework necessitates the tracking of all the stocks and flows associated with wealth—human wealth (based on labor income) and financial wealth (based on government debt, the private business capital stock, and net foreign assets). It should be noted that financial markets are incomplete, so international financial flows are tracked as net positions (net foreign assets or net foreign liabilities) and denominated in U.S. dollars.

Consumption dynamics are driven not only by OLG households, but also by liquidity constrained (LIQ) households. LIQ households do not have access to financial markets, do not save, and thus consume all their income each period. This feature amplifies the non-Ricardian properties of the basic OLG framework.

Private Investment

Private business investment uses an updated version of the Tobin's Q model, with quadratic real adjustment costs. Investment is negatively correlated with real interest rates. Investment cumulates to the private business capital stock, which is chosen by firms to maximize their profits. The capital-to-GDP ratio is inversely related to the cost of capital, which is a function of depreciation, the real interest rate, the corporate tax rate, and relative prices.

Public Absorption

Government absorption consists of spending on consumption and investment goods. Government consumption spending only affects the level of aggregate demand. It is an exogenous choice determined by the fiscal authority. The level of government investment is also chosen exogenously, but in addition to affecting aggregate demand directly, it also cumulates into a public capital stock, which can be thought of as public infrastructure (roads, buildings...etc.). A permanent increase in the public capital stock permanently raises the economy-wide level of productivity.

Net Exports

The level of net exports is determined in the long run by the real competitiveness index (RCI) that adjusts to achieve the current account balance required to support the desired net foreign asset position. Exports and imports, individually, are modeled as reduced-form equations. Exports increase with foreign activity, and are also an increasing function of the depreciation in the RCI. Imports increase with domestic activity, and are also an increasing function of the appreciation of the REER.

To keep the dimensionality of the model small enough to allow it to have a large number of individual country blocks, the model does not track all the bilateral trade flows among countries. The model has, however, been developed to have exchange rate and export volume properties that are similar to the IMF's multiple-good, structural models. This is accomplished by having time-varying trade shares that are a function of the relative level of tradable and non-tradable productivity within each country. Consequently, the model is able reproduce the currency appreciation that results when a country's tradable sector productivity growth exceeds that in the non-tradable sector (Balassa-Samuelson effect). Further, even though only the aggregate levels of exports and imports are tracked in each country, there are mechanisms in place that ensure global exports and imports sum to zero.

Importantly, the current account and implied net-foreign-asset positions are intimately linked to saving decision of the households. The model can be used to study both creditor and debtor nations as non-zero current accounts can be a feature of the well-defined steady-state in the OLG framework.

Aggregate Supply

Aggregate supply is captured by potential output, which is based on Cobb-Douglas production technology with trend total factor productivity, the steady-state labor force, the non accelerating inflation rate of unemployment (NAIRU), and the actual capital stock.

Steady-state population growth is taken as exogenous, although there are cyclical variations in both the participation rate and the unemployment rate. The behavior of the participation rate is based on properties of labor supply observed in other IMF structural models, such as the Global Integrated Monetary and Fiscal Model (GIMF) and Global Economy Model (GEM). The unemployment rate varies relative to the NAIRU according to an Okun's law relationship based on the output gap.

Prices

The core price in all regions is the consumer price index excluding food and energy, CPIX, which is determined by an inflation Phillips curve. CPI inflation is sticky and reflects the expected paths of exchange rates and the economic cycle, as captured by the output gap. In addition, although the direct effects of movements in food and energy prices are excluded, there is a possibility that persistent changes in oil prices can leak into core inflation. The degree of forward-looking behavior in inflation is country specific.

The prices mimic the structure of production of consumption, investment, government, and exports of goods and services. The consumption deflator is the CPI (including the effects of oil and food prices). The investment deflator is a weighted average of the deflators for GDP and imports. The government deflator moves in tandem with the CPIX deflator. The deflator for exports is an estimated equation, with coefficients on the GDP deflator, and a competitiveness-weighted average of the relative price of foreign goods, accounting for real exchange rate movements. The import deflator is an import-weighted average of all other countries' export price deflators. Finally, the GDP deflator itself is a real-component-weighted average of the consumption, investment, government, export and import deflators.

In addition, there is a Phillips curve for nominal wage growth. Wage inflation exhibits stickiness and allows the real wage to return to its equilibrium only gradually depending on the expected evolution of overall economic activity.

Monetary and Fiscal Policy

In the short run, the nominal side of the economy is linked to the real side through monetary policy. The behavior of monetary authorities is represented by an interest rate reaction function. The standard form is an inflation-forecast-based rule operating under a flexible exchange rate. However, the form of the interest rate reaction function is such that there is scope for a fixed exchange rate regime, monetary union, or a managed floating exchange rate regime.

The model also contains a 10-year interest rate that is based on the expectations theory of the term structure, plus a term premium. The interest rates on consumption, investment, government debt and net foreign assets are weighted averages of the short-term policy rate and the 10-year interest rate, reflecting their differing term structures, and allowing for a meaningful role for the term premium.

The government sector is much broader than government absorption. There is additional spending by the fiscal authority on lump-sum transfers to all households, or targeted exclusively to liquidity-constrained households. The fiscal authority chooses a long-run level of debt relative to GDP (or conversely, a long-run deficit target). In order to meet its debt or deficit targets, as well as spending obligations, it can tax, using consumption taxes (VAT), labor income taxes, corporate income taxes and lump-sum taxes. In the face of shocks to the economy under the default fiscal reaction function, all tax rates remain fixed and spending on general lump-sum transfers adjusts to ensure that the public debt-to-GDP ratio is maintained in the medium term. However, the fiscal reaction function can also be specified to use other instruments besides general transfers.

References

Aghion, P. and E. Kharroubi, 2007, "Cyclical Macro Policy and Industry Growth: The Effect of Countercyclical Fiscal Policy," Working Paper, Harvard University.

Baldacci, E., and M. Kumar, 2010, "Fiscal Deficits, Public Debt and Sovereign Bond Yields," IMF Working Paper 10/184 (Washington: International Monetary Fund).

Baxter, M., and King, R. G., 1995, "Measuring Business-Cycles: Approximate Band-Pass Filters for Economic Time Series," Working Paper No. 5022, National Bureau of Economic Research.

Blanchard, O., Jaumotte, F., and Loungani, P. 2013, "Labor Market Policies and IMF Advice in Advanced Economies During the Great Recession," IMF Staff Discussion Note, SDN/13/02 (Washington: International Monetary Fund).

Dotsey, M., 1994, "Some Unpleasant Supply Side Arithmetic," *Journal of Monetary Economics*, pp. 507–24.

Elmendorf, D. and N. Mankiw (1999). "Government Debt," in Taylor, J. and Woodford, M. (eds.), Handbook of Macroeconomics, vol. 1C, 1615-1669, North-Holland.

Fuentes, R., F. Gredig., and M. Larrain. 2007. "Estimating the Output Gap for Chile." Central Bank of Chile Working Paper No. 455.

Hodrick, R. J., and Prescott, E., 1997, "Post-War U.S. Business Cycles: An Empirical Investigation," Journal of Money, Credit, and Banking, Vol. 29(1), pp. 1-16.

Magud, N., and L. Medina, 2011, "The Chilean Output Gap," IMF Working Paper 11/02 (Washington: International Monetary Fund).

OECD, 2014, "OECD Economic Surveys: Hungary 2014," OECD Publishing.
http://dx.doi.org/10.1787/eco_surveys-hun-2014-en

Sosa, S., Tsounta, E., and Kim, H. S., 2013, "Is the Growth Momentum in Latin America Sustainable?" IMF Working Paper No. 13/109 (Washington: International Monetary Fund).

Woo, J., 2009, "Why Do More Polarized Countries Run More Procyclical Fiscal Policy?" *Review of Economics and Statistics*, Vol. 91(4), pp. 850–70, November.

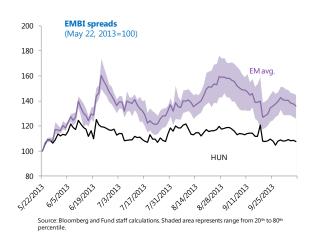# TAKING STOCK OF HUNGARY'S EXTERNAL VULNERABILITIES[1]

A. Introduction

1. **The 2013 Country report for (IMF, 2013) underscored external vulnerabilities as a key risk factor for Hungary**. The report noted the high open foreign currency positions on balance sheets, high external debt and financing needs, as well as high share of nonresident investors in government bonds (HGB) as key sources of vulnerability. The report cautioned that a reversal of capital flows, a change in investor sentiment or a broader loss of confidence in emerging markets (EMs) could lead to large funding pressures, exert pressure on the exchange rate, and cause wide spread balance sheet effects.

2. **However, Hungary experienced lower volatility than other EMs during the market turmoil over the past year**. While a number of EMs experienced capital outflows and pressure on their exchange rates starting in late May 2013 (following the Fed's announcement of earlier-than-expected tapering of bond purchases), Hungary experienced relatively lower volatility. And even though the country was affected more during the volatility episode of January-February 2014, the impact was relatively short lived and not as severe as initially feared.

3. **Against this backdrop, this chapter attempts to reassess Hungary's external vulnerabilities**. It draws motivation from Hungary's relatively better performance against its peers, raising the question of how vulnerable the country is to external shocks and how its vulnerability compares to other EMs. The chapter also assesses external risks facing the economy in the near-to-medium term. Section B recounts Hungary's performance during the bouts of market turmoil over 2013–14. Section C notes the improvements that had been instrumental in Hungary's favorable performance, and Section D describes remaining sources of external vulnerabilities. Section E discusses how external risks could affect Hungary in light of improved fundamentals. Section F concludes.
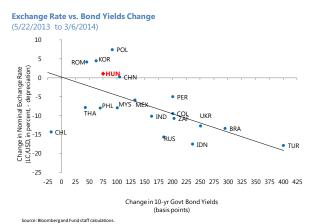
B. Developments over 2013–14

4. **As EMs equity and bond flows turned in 2013:H1, flows to Hungary remained resilient**. Flows to EMs began declining in February 2013, starting with equities and reflecting improved growth outlooks in advanced markets against weakening growth prospects in EMs. In May 2013, a Fed announcement brought forward the expected timing of tapering bond purchases, and led to a
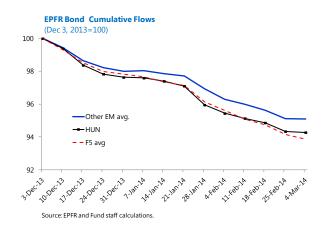
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[1] Prepared by Ceyda Oner.

change in the outlook for interest rates and induced bond outflows, thus exerting further pressure on EMs currencies. While EMs were affected differently during these bouts of volatility, Hungary's experience was better than that of the so-called "Fragile 5" countries (Brazil, India, Indonesia, South Africa, and Turkey) and in line with other EMs' average. Spreads rose by around 20 bps during May–June in Hungary, while for other EMs spreads rose by 40 bps on average. Capital outflows from EMs continued through August; EPFR data shows that bond outflows between May–August were about 7 percent for Hungary, in line with other EMs, while it was between 7–9 percent for the "Fragile 5". The forint remained broadly stable against the $US during this time when other EMs currencies depreciated significantly.
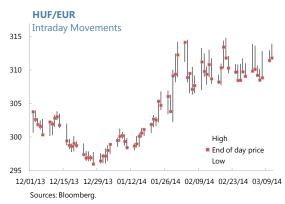

EMBI spreads
(May 22, 2013=100)

Source: Bloomberg and Fund staff calculations. Shaded area represents range from 20th to 80th percentile.

Exchange Rate vs. Bond Yields Change
(5/22/2013 to 3/6/2014)

Source: Bloomberg and Fund staff calculations.

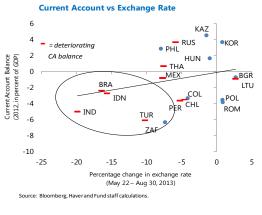5.   **The January–February 2014 episode was more severe for Hungary, though short-lived**. Spreads rose sharply in late January as EMs experienced another round of volatility, triggered by a culmination of factors, notably negative news from EMs including lower-than-expected PMI data from China, in the context of expectations that the Fed will further scale back its asset purchases. This time around, Hungary was affected more than it was over the May–June 2013 episode, and even relative to other EMs. Outflows coincided with the central bank of Hungary's (MNB) statement about monetary policy stance in late-January 2014. Pressure on the exchange rate continued through mid-February, as markets watched closely the redemption of a large bond (HUF 537 billion, €1.8 billion) that was held in large part by nonresident investors. Intraday volatility of the exchange rate also rose sharply around this time, indicating continued pressure in the FX market. Since then, markets have stabilized in Hungary, as well as across the broader EMS universe, though nonresident holdings of HGBs have gradually declined by HUF 270 billion (year-to-date, see below).

EPFR Bond Cumulative Flows
(Dec 3, 2013=100)

Source: EPFR and Fund staff calculations.

HUF/EUR
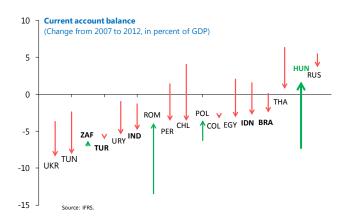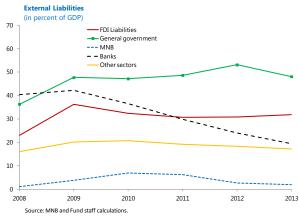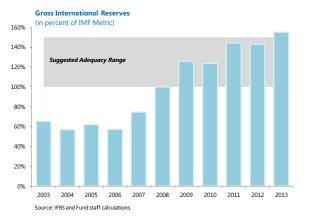Intraday Movements

Sources: Bloomberg.

C. Factors Contributing to Hungary's Resilience over the Recent Turmoil

6.   **Improvements in Hungary's external indicators helped when markets differentiated among EMs.** The countries that saw the larger current account (CA) deterioration were affected more in the summer 2013 turmoil. Hungary's CA turned from a deficit of 7–8 percent of GDP before the global financial crisis (GFC) to a surplus of 1–3 percent in the last two years. The higher CA balance owes in part to low domestic demand keeping import demand compressed. At the same time, EU fund inflows of €4–5 billion per year have supported the external position.

Current Account vs Exchange Rate

Source: Bloomberg, Haver and Fund staff calculations.

Current account balance
(Change from 2007 to 2012, in percent of GDP)

Source: IFRS.

External Liabilities
(in percent of GDP)

Source: MNB and Fund staff calculations.

Gross International Reserves
(in percent of IMF Metric)
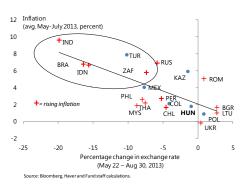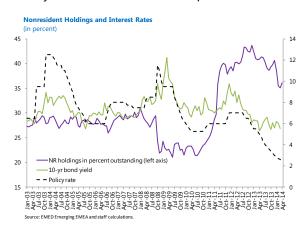

Source: IFRS and Fund staff calculations.

7.   **Ongoing deleveraging has also helped improve balance sheet risks**. Hungary's external debt has declined by an impressive 31 percentage pointssince peaking at 150 percent of GDP in 2009. The decline in private external debt, most significantly in the banking sector, coupled with policies to convert foreign currency denominated debt with local denomination, has reduced exposure to exchange rate risks. Gross international reserves (GIR) remaining broadly stable while external debt was reduced has helped improve reserve coverage, appearing favorable against other EMs and giving comfort to markets. The early repayment of the outstanding credit to the IMF added to this improvement despite temporarily reducing GIR. The banking sector is adequately capitalized despite the heavy cross-border deleveraging, tax burden, and low profitability.

8.   **Similarly, there have been improvements in key domestic indicators**. Improvements in fiscal balances have been instrumental. Hungary's fiscal balance exhibited a welcome turnaround, falling below the 3 percent of GDP limit and thereby led to Hungary's exit from the EU's Excessive Deficit Procedure (EDP) in mid-2013. The government's continued commitment to keep the fiscal balance above the EDP threshold is another positive factor that has kept the demand for government securities robust. Hungary's declining inflation, albeit partly owing to administrative price cuts, may have also contributed to the country's resilience, as those with rising inflation were affected more in the turmoil over the last summer.

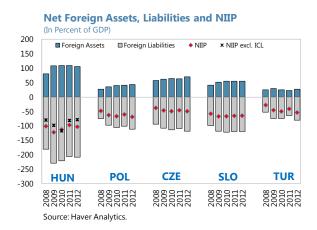Source: Bloomberg, Haver and Fund staff calculations.

9.   **Sizeable nonresident holdings of government bonds have provided some stability to bond flows**. The high concentration of nonresidents in the government securities market whose holdings have been broadly stable have provided an anchor while other EMs were experiencing outflows. While exact data on nonresident investors and their holdings are not available, they hold 32 percent of outstanding HGBs, close to half of which may be due to Franklin Templeton. Templeton's holdings are likely to have been broadly stable, with purchases increasing ahead of large redemptions so as to maintain overall holdings relatively constant. That said, recent data point to nonresident holdings switching from HGBs to MNB bills, which could be indicative of a change in strategy (see next section). Nonresident participation has typically also allowed for yields to remain lower in EMs, though in the case of Hungary the policy rate has been a strong driver of bond yields (See Pradhan et al, 2011).

Source: EMED Emerging EMEA and staff calculations.

D.   Remaining Sources of Vulnerabilities

10.   **Notwithstanding significant deleveraging, external debt remains large**. External debt stood at 119 percent of GDPat end-2013 (30 percent of which is intra-company debt), with the share of short-term debt at remaining maturity rising from around 20 percent before the GFC to around 30 percent in 2013. While the debt ratio appears sustainable in the face of standard shocks (See External DSA in Appendix 1 of the accompanying Staff Report), the level is still very high by international standards and continues to be a drag on growth. The net investment position (NIIP) also remains highly negative by international standards at above -90 percent of GDP (over -300 percent in BPM6 definition), even after taking into account intra-company loans. These unsustainable levels suggest that the deleveraging process is likely to continue in the coming years, as also reflected in staff's baseline projections for Hungary.

11.   **High external liabilities also keep external financing needs elevated, which is subject to rollover risk**. Despite the CA being in surplus, external financing needs remain large by international standards at around 30 percent of GDP in 2014. Moreover, the CA balance is expected to shrink in the coming years and turn to a deficit by the end of the medium term, adding to external financing needs. The decline in the CA balance is expected to tend toward its long-term norm of a 1½–2 percent of GDP deficit, which mainly reflects: (i) savings normalizing to lower levels as implied by Hungary's aging population and as the deleveraging process comes to an end; and (ii) imports recovering in line with a closing output gap. As shown in Table 10 of the accompanying staff report, meeting such high external financing needs requires public sector rollover rates to be sustained above 100 percent over the medium term.

Net Foreign Assets, Liabilities and NIIP
(In Percent of GDP)

External Financing requirement in 2014
(in % of GDP)

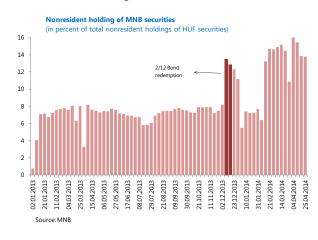Source: Haver Analytics.

Source: Fund staff estimates.

12.   **Heavy reliance on nonresidents can be a double-edged sword**. Nonresident holdings remained broadly stable at around HUF5 trillion (40 percent of outstanding stock) over the May–July 2013 turmoil episode, but have gradually declined since then to around HUF 4.8 trillion (35 percent of outstanding) by end-March 2014. Most of the decline is contained to January-February volatility episode, during which time holdings of MNB securities increased by

HUF 465 billion, almost twice the decline in nonresidents' HGB holdings. This shift to MNB securities may reflect large nonresident investors smoothing or winding down their HGB positions gradually so as not to move the market. Large bond redemptions are coming up, including a HUF 533 billion (€1.7 billion) bond in August 2014, and meeting the high rollover needs of the public sector hinges crucially on continued demand from nonresident investors. That said, a high concentration of nonresident institutional investors which provides stability during normal times, as in the case of Templeton and Hungary, can become destabilizing under severe external shocks (IMF 2014a).

Nonresident holding of MNB securities
(in percent of total nonresident holdings of HUF securities)

2/12 Bond redemption

Source: MNB

13.   **Large net open positions continue to pose risks to balance sheets from large exchange rate movements**. Open positions have been declining from the peak of nearly 60 percent of GDP in 2009 to around 20 percent in 2013. Nonetheless, about 10 percent of GDP on household and 14 percent on corporate balance sheets are significantly large unhedged positions that leave these sectors susceptible to exchange rate depreciation. Moreover, the exchange rate risk can be exacerbated by market perceptions of psychological thresholds for the HUF/EUR rate if they expect the MNB to intervene against depreciation pressures and therefore keep positions unhedged ("moral hazard" problem).

Open FX Positions by Sectors
(In percent of GDP)

Household sector   Corporate sector   General government

Source: MNB.

E.   External Risks and Potential Impact

14.   **External risks remain significant**. The key risks facing EMs, including Hungary, pertain to changing global economic and financial conditions that may create more volatility in the period ahead: a decoupling of advanced economy monetary policy, as interest rates rise in the U.S. but remain low in the euro area, and slowing EMs potential growth relative to the exceptional levels seen in the 2000s. In addition, escalation of geopolitical tensions pose additional downside risks, as Hungary, like the rest of Eastern Europe is highly exposed to Ukraine and Russia through trade and financial channels, including through common institutional investors. The potential impact of such shocks on EMs is studied in the recent *Regional Economic Issues* (IMF 2014b), *World Economic Outlook* (IMF 2014c), and Cubeddu et al (2014).

15.   **Sharp tightening of global financial conditions could have a significant impact on portfolio flows in Hungary**. Such a shock could lead to another bout of volatility as seen over the

last 12 months, leading to a change in investor sentiment or repricing of emerging market risk. In such an event, whether Hungary would be relatively less affected, as in May–June 2013, or relatively more, as in January–February 2014 (or in early 2012), is hard to determine. IMF 2014b estimates that a combined shock of larger-than-expected rise in U.S. long-term bond yields of 50 basis points, a 20 basis point rise in the VIX and a rise in U.S.-German long-term bond spreads could affect Hungary, more than regional peers, through portfolio outflows of up to 8 percent of stock. The study finds that the potential impact on spreads could be up to 170 basis points, a medium impact relative to peers, whereas the impact on bond yields would be relatively low at up to 120 basis points.

16.   **Such a shock could also take a toll on longer-term growth, but the impact could be mitigated by other factors**. The partial impact estimated from long-term panel regressions is about 0.4 percentage points decline of real GDP growth over the next 5 years (see Cubeddu et al. (2014) for details of the model). This result likely overestimates the impact on growth as tighter financial conditions would come about only if growth prospects in the U.S. are better, which would be expected to have a positive, albeit small effect on Hungary.[1]

F.   Conclusions

17.   **Welcome improvements in fundamentals have reduced, but not eliminated, Hungary's external vulnerabilities**. Marked improvements on the external front, including the strong adjustment of the current account, improved reserve coverage, and reduced external debt, have at times given comfort to market participants and kept Hungary relatively little affected during bouts of volatility over the past year. Nevertheless, the large remaining vulnerabilities of the economy, the still-high external debt and resulting financing needs, sizeable open positions, and continued dependence on nonresident demand for HGBs make Hungary vulnerable to external shocks. The potential impact of such shocks could be significant. Therefore, it is crucial for Hungary to bank on the improvements that have been achieved over the last few years, and continue diligently to reduce its remaining vulnerabilities and recalibrate its macroeconomic policies to build buffers.

18.   **Last but not least, strengthening institutions and increasing policy predictability will be key to maintaining market confidence**. EMs' experience over the last year shows how fragile market sentiment can be, and there is no guarantee that countries that were spared at certain times will be spared again in the next bout of volatility. In the face of a changing sentiment toward EMs, strong fundamentals, adequate buffers and policy credibility are the best tools to weather potential volatility.

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[1] IMF 2014b estimates using a general equilibrium framework that the combined effect of higher growth and interest rates in the U.S., if accompanied by volatile financial conditions, would have a small negative effect on growth in Emerging Europe.

References

Cubeddu, L., A. Culiuc, G. Fayad,Y. Gao, K. Kochhar, A. Kyobe, C. Oner, R. Perrelli, S. Sanya, E. Tsounta, Z. Zhang, "Emerging Markets: Where are They Headed?" Staff Discussion Note, forthcoming.

IMF, 2013, Country Report No. 13/85, March.

IMF, 2014a, *Global Financial Stability Report*, "Chapter 2: How Do Changes in the Investor Base and Financial Deepening Affect Emerging Market Economies?" April.

___, 2014b, *Regional Economic Issues, Central, Eastern and Southeastern Europe,* April.

___, 2014c, *World Economic Outlook*, April.

Pradhan M, R. Balakrishnan, R. Baqir, G. Heenan, S. Nowak, C. Oner, S. Panth; 2011, "Policy Responses to Capital Flows in Emerging Markets" Staff Discussion Note SDN/11/10, April.

LABOR MARKET: RECENT TRENDS AND POLICIES[1]

A. Introduction

1. **Hungary's growth performance has been lagging behind its peers over the past years, and raising its potential will include addressing low labor force participation rates.** Labor market participation rates in Hungary are among the lowest in the European Union, and are also low in comparison to regional peers.

2. **Since 2010, the authorities implemented a number of reforms that directly or indirectly affected the labor market.** As a result, participation rates and employment have increased of late. Yet, large-scale employment in public works programs may be masking sluggish private sector job growth, and much more needs to be done to boost sustained employment creation in the private sector.

3. **In part, reforms have been incomplete.** For example, too little has been done so far to improve public education and vocational training to reduce skill mismatches, especially of the young. However, a significant number of measures introduced by the government arguably *increased* obstacles to employment, including a higher tax wedge for low-income earners, substantial increases in the minimum wage, and–not least— a deterioration in the business climate due to an increased administrative burden, tax complexity, and frequent policy changes.

4. **Against this background, the chapter analyzes recent labor market developments in Hungary and identifies policy recommendations for addressing remaining obstacles to sustainable increases in employment.** Section B describes recent labor market developments, including the government's most critical reform steps, and identifies key remaining challenges. Section C draws on international and Hungarian evidence to develop policy recommendations for removing obstacles to higher participation and employment in Hungary. Section D concludes.[2]
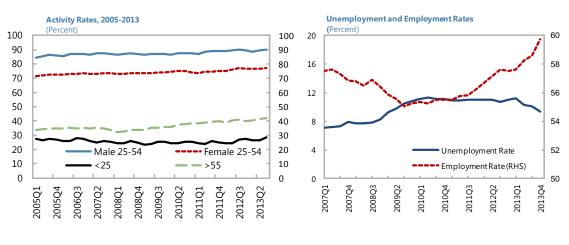
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[1] Prepared by Eva Jenkner.

[2] A few disclaimers: we focus on micro-level incentives, but of course it is acknowledged that a much more comprehensive policy response is required to create sustained employment growth. Also, we focus on the *labor-market impact* of tax and benefit interventions, while it is understood that many of the interventions discussed primarily have social or redistributive objectives. Further, budgetary implications and the availability of fiscal space are only considered for selective measures. Finally, in many instances the timeliness of our data is not keeping up with the rapid policy changes in Hungary. Nonetheless, we consider the evidence presented still to be relevant.
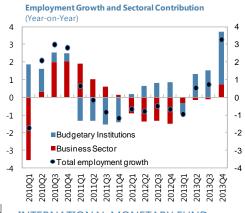
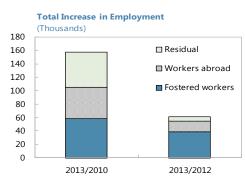## B. Recent Labor Market Developments

Stylized Facts

5.   **The authorities took a number of steps to increase labor force participation and employment (Box 1).** Participation rates have been increasing gradually over the past decade. In particular, participation among older cohorts saw a significant increase as steps were taken to tighten access to early retirement schemes, and the full impact of the phasing out of conventional early retirement schemes and stricter eligibility criteria for disability pensions is yet to filter through the data. At the same time, higher participation rates coincided with falling unemployment as employment rates increased significantly through end-2013.

Source: Eurostat

6.   **While private sector's contribution to employment creation picked up in the last quarter of 2013, the overwhelming share of the increase in employment has been due to the expansion of the public works program.** To a smaller degree, gains in employment abroad also played a role. Controlling for these two phenomena highlights that private sector employment growth in Hungary still remains too weak to absorb the existing—or, through increases in participation, growing—labor force. In sum, while cuts in benefits appear to have been relatively successful in bringing workers into the labor market, policies do not appear to have been as successful in creating a futile ground for absorbing this additional labor in a sustainable way.

Source: KSH

Box 1. Major Policy Changes Since 2011

The Széll Kálmán reform plan included a significant number of measures with direct or indirect repercussions for the labor market (Ladanyi and Kierzenkowski, 2012). These included:
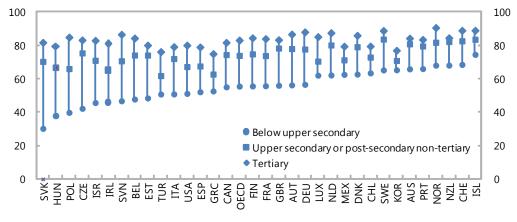
- *Tax Policy:* A flat PIT with elimination of the employment tax credit and super-grossing; simplified business taxes; and reduced employer contributions for targeted groups (low-skilled, young, old, long-term unemployed, returning mothers, career starters).

- *Benefit Reform:* Significant changes in the duration, level and eligibility for unemployment benefits, social assistance, and other income replacement benefits. For example, the duration of unemployment benefits was cut to three months. Early retirement options and access to disability benefits were severely restricted.

- *Active Labor Market Programs:* A First Job Guarantee Program for career starters; and a much-scaled-up public works program, accounting for about 5 percent of total employment by end-2013.

- *Labor Code*: Reductions in employment protection; and more flexible work options.

At the same time, the government also took a number of measures that could result in a negative impact on labor supply and demand, on balance. For example, tax reductions overwhelmingly benefited higher income groups, while the tax wedge (and associated work disincentives) for low-income earners actually increased (Toth and Virovacz, 2013; OECD, 2014). The minimum wage was raised substantially to compensate workers that were adversely affected by the tax changes (19 percent in 2012; 5 and 3.5 percent in 2013 and 2014, respectively), while minimum tax hikes in Hungary tend to depress demand for labor (Kertesi and Köllő, 2003; Elek at al., 2012). Finally, while welcome progress was made on phasing out early retirement options, a new early retirement scheme for women was introduced.
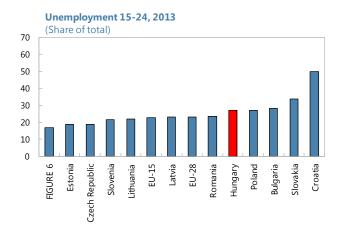
Remaining Challenges

7.   **Not unlike in other countries of the region, the key remaining challenge is very low employment of the *low-skilled*.** Hungary boasts the second-lowest employment rate of low-skilled workers in the OECD, at around 40 percent, with obvious implications for poverty and inequality.
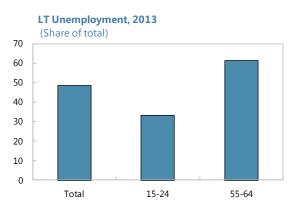
Employment rate by level of educational attainment
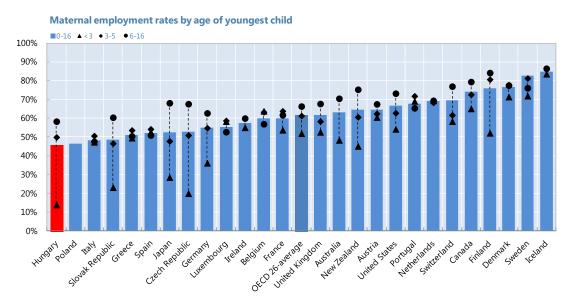Employed persons aged 25-54 in per cent of population in the same age group, 2011

Source: OECD (2013), Education at a Glance 2013: OECD Indicators.

8.   **Structural unemployment of low-skilled workers has been an unwelcome by-product of the economic transition across the region, and is also reflected in especially high *long-term unemployment* rates for older cohorts—almost three-quarter of registered unemployed above the age of 55 are unable to find jobs.** However, in Hungary, there is a troubling link to the younger cohorts that leave the education system with minimal skills and never manage to find productive employment. **Youth unemployment** at 27 percent is relatively high. Activity rates of workers below the age of 25 are very low, in particular amongst the low-skilled, and about a third of youth unemployment is considered long-term.

Unemployment 15-24, 2013
(Share of total)

LT Unemployment, 2013
(Share of total)

9.   **Despite the recent increase, labor force participation also remains low for *older cohorts* and for *women*.** Above all, Hungary remains an outlier with regard to maternal employment for mothers with children below the age of 3, which is exceptionally low at just over 10 percent. Employment rates of mothers with three or more children are also the lowest within the OECD, at just above 20 percent.

Maternal employment rates by age of youngest child

Source: Australia, Australian Bureau of Statistics (2005); Statistics Canada (2001 data), Statistics Denmark (1999 data), Statistics Finland (2002 data), Statistics Iceland (2002 data for women age 25-54), Japanese authorities (2001 data), Swiss LFS (2006 2nd quarter data), UK Office of National Statistics (2005 data), and the US Current Population Survey (2005 data); all other EU countries, European Labour Force Survey (2005 data, except for Italy which concerns 2003).

C.   Scope for Further Policy Action: Removing Obstacles to Employment

10.   **In view of the recently enacted reforms to the tax and benefit systems, scope for further policy changes in Hungary may appear limited.** However, in order to boost private sector employment there is a need to i) complete and strengthen reforms that have been left unfinished; ii) mitigate some of the adverse effects of measures that were taken (see Box 1); and iii) tackle areas that have been left untouched so far. Recommendations consider constraints both on the supply and demand side of labor and are organized by major areas for reform. As a backdrop to the discussion focused on Hungary, Box 2 and Table 1 summarize international policy responses.

Box 2. International Policy Responses

Advanced countries have employed some or all of the following interventions in order to boost participation and job-creation:

- **Overall reductions in the tax wedge:** Redistribution of the tax burden towards consumption taxes and/or by base broadening; on the benefit side, by reducing the generosity and tightening eligibility criteria of benefit programs.

- **Targeted tax relief:** "In work" tax credits for low-income earners, women, or older workers, while redistributing the tax burden to groups with a more inelastic labor supply; and targeted employer tax credits for specific groups of workers.

- **Making pension benefits actuarially neutral to the age of retirement:** For example, removing the tax-favored status of early retirement programs (vis-à-vis pension benefits) to reduce financial incentives to retire.

- **Reductions in labor market rigidities:** Greater flexibility in hiring and firing; minimum wage differentiation according to age, experience, or ability.

- **Emphasizing "active" labor market programs (ALMPs)**: Particularly important for the long-term unemployed or young; most effective interventions include targeted wage subsidies and tailored training and job search assistance.

Blanchard, Jaumotte and Loungani (2013) identify three basic labor market regimes that have evolved over time: the "Anglo-Saxon" model with low employment protection and low unemployment benefits; the "Nordic" model with high employment protection, generous but conditional unemployment benefits, and strong ALMPs; and the "continental model" with a high degree of protection and benefits, but little ALMPs. While the first two models are deemed relatively successful in keeping unemployment low, they have very different outcomes with regard to income inequality, which tends to be substantially higher in countries with the Anglo-Saxon model. As the consensus view is moving towards embracing the Nordic system, also termed "flexicurity," it may be challenging to replicate this model in countries with very different traditions of labor relations. Specifically, the degree of trust between firms and workers appears to carry a high importance; and civic attitudes have a critical impact on the efficiency of labor market institutions that are vulnerable to abuse.

Also, just like Hungary, countries have been struggling to integrate specifically vulnerable groups into the labor market (Table 1). With regard to **low-wage earners**, interventions generally aim at reducing marginal tax rates (through employer and employee tax credits); increased "in work" benefits; keeping minimum wage increases in line with productivity; and tailored ALMP programs and training to alleviate skill gaps. In a similar fashion, programs aimed to support **unemployed youth** and **long-term unemployed** generally include targeted tax relief for employers and training and job-matching programs. Moreover, to further reduce wage costs and incentivize hiring of these "higher risk" groups, countries provide (generally time-bound) wage subsidies or differentiate the minimum wage floor.

> ### Box 2. International Policy Responses - concluded
>
> Efforts to reduce obstacles to **female labor market participation** have centered on targeted tax relief for second earners or single mothers; subsidies to improve the availability of affordable child care; family-friendly employment flexibility; and adjusted parental leave policies (including job return guarantees). Finally, as population ageing is putting pressure on the viability of public pension and health systems, statutory retirement ages are being raised in line with life expectancy and policies are aimed at keeping **older cohorts** active for longer periods. Early retirement options have been restricted or made less attractive through higher actuarial penalties, and countries have fine-tuned tax interventions to make pension benefits actuarially neutral to additional years in employment. This has involved taxing pension benefits or providing "in work" tax credits. Reductions in employer contributions that are relatively successful in increasing demand for low-skilled workers have not yielded a positive impact in the case of older workers (OECD 2011b).
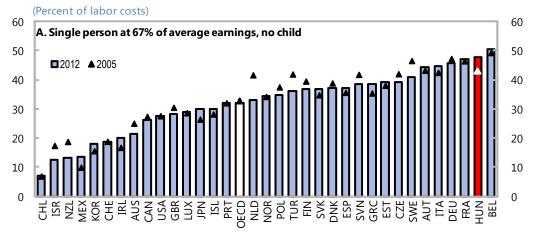
Labor Supply

Tax Policy

11.   **Moving into the workforce can be discouraged by high "participation taxes," or the combined impact of taxes on income and reductions in previously received benefits.** International evidence shows that some groups are particularly sensitive to work disincentives, such as low-income workers, second earners, single parents (mostly women) and older workers. Male labor market participation is overall pretty inelastic, but elasticities are higher for low-skilled workers. The same is true in Hungary. For example, Benczur et. al (2012) find above-average tax and benefit elasticities for the low-skilled, older workers, and women of child-bearing age.[3]

12.   **The recent changes in the Hungarian tax system reduced the overall tax burden on labor, and annual tax revenues fell by approximately 1.5 percent of GDP.** However, Toth and Virovacz (2013) estimate that taxpayers in the two top income deciles had their tax burden reduced by about 2 percent of GDP, while people in the bottom half of the income distribution mostly ended up with a higher tax burden. Nevertheless, the overall tax wedge in Hungary still remains high, and the tax wedge for low-income earners increased as a result of the reforms, augmenting the risk of unemployment and inactivity traps (OECD 2013b). This could be addressed by reinstating a limited employment tax credit (ETC). The design of such an ETC should be more targeted than the ETC that was in effect in 2010, which would help reduce its budgetary cost. As described in Benedek et. al (2013), it should be credited only against labor income, and phased out rapidly after the minimum wage (while preserving reasonable METRs).

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[3] They found a high sensitivity for married women in particular, which diverges slightly from the international evidence that single women are the most elastic in their labor supply decisions.

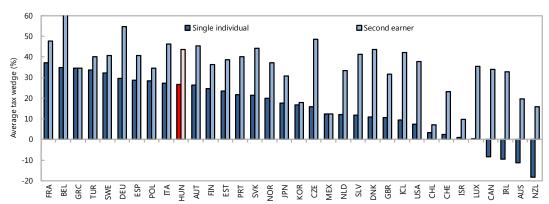**Average tax wedge on low to average wages**[1]

(Percent of labor costs)

Sources: OECD (2013), "Taxing Wages: Comparative tables", OECD Tax Statistics (database), December.

1. Taxes are the sum of personal income tax and employee plus employer social security contributions together with any payroll tax less cash transfers.

13.   **Income underreporting is a concern in the context of income-targeting, and the latter should be accompanied by forceful tax administration measures.** There are a number of known sectors where the probability of underreporting is the highest and tax audits could be targeted on those (Elek et al., 2012). Also, a more streamlined tax regime could help transparency and compliance and facilitate tax audits. ETCs tend to have the strongest participation effect if beneficiaries get a regular pay-out (via a direct monthly cash transfer or higher monthly net pay due to reduced employer tax withholding). In Hungary, this would have to be weighed against the administrative costs, however. As the administrative burden on firms (especially SMEs) is already high, annual rebates may be preferable.

14.   **Another notable fact is that the tax wedge on second income earners with children is also high in Hungary—despite its system of individual taxation (OECD, 2011a).**[4] This represents an additional obstacle to female participation, which is aggravated by the higher elasticity at the extensive margin found for married women in Hungary (Benczur et al., 2012).

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[4] In line with Jaumotte (2003), second-earner tax wedge is computed as how much extra income tax and social security contribution (SSC), the family will have to pay, as a proportion of the second earner's total income plus employer SSC due on the second earner's income.
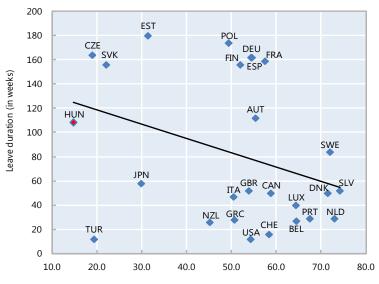
Average tax wedge – single parent versus second earner (two children); income = 67% of AW; (primary earner income = 100% of AW)
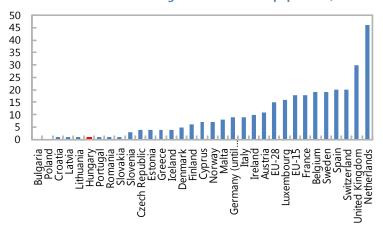

Social Benefits

15.   **Apart from financial incentives, parents' participation decisions tend to be sensitive to a job return guarantee, the availability of affordable childcare, and flexible work arrangements.** International evidence on the relationship between paid parental leave and female employment suggests that shorter leave periods may have a positive influence on keeping women in the labor force. For example, women in the US were more likely to return to work if they had a leave entitlement of 12 weeks (Berger and Waldfogel, 2004). The marginal effect of extending leave periods beyond certain limits appears to be negative, however (OECD, 2011a).

16.   **In Hungary, mothers' labor force participation decisions appear less responsive to standard interventions than expected.** For example, several studies find no significant increase in mother re-entry rates after the de-facto reduction in the child benefit in 1996 (Köllő, 2009 and 2012; and Szabo-Morvai, 2011). Also, while women's labor force participation responds positively to the availability of affordable childcare, participation decisions (especially as children turn 3) seem to be influenced heavily by factors other than childcare and the duration of parental leave (Lovasz and Szabo-Morvai, 2013), suggesting a strong role of societal preferences and expectations.

17.   **During the recent reforms, maternity benefits were made a little more flexible, but total parental leave was recently extended from two to three years and the system remains heavily skewed towards keeping mothers of very young children at home.** As illustrated, there is a clear negative relationship between the duration of leave and maternal employment. Apart from the financial and other incentives inherent in the benefit system, parents are also severely constrained by the limited availability of subsidized childcare for children below the age of three.

Employment rates for mothers with children below age 3 and leave duration

Formal childcare under the age of 3 - % over the population, 2011

Source: Eurostat SILC 2013

18.   **Moreover, access to flexible work arrangements also tends to affect parents'**
participation decisions. Growing female labor force participation across Europe—for example,
in the Netherlands— is strongly associated with part-time employment. However, it is not clear
to what extent this has been a constraint in Hungary. Anecdotal evidence suggests that part-time
employment may just not be affordable for most. This underscores the need for a three-pronged
approach to facilitate higher female labor force participation, including income support and/or tax
incentives, family-friendly work conditions, and the availability of affordable child-care. In addition, a
shorter duration of parental leave and some streamlining of family benefits (such as the abolition of
accrued vacation benefits to be paid by the employer) could help boost labor demand in this
segment.

Pension System and Health Care

19.   **Old-age and disability pensions have a strong impact on retirement decisions in Hungary, in particular for low-wage earners in disadvantaged regions (Köllő and Nacsa 2005; Cseres-Gergely 2008).** The steps taken to phase out early retirement schemes and tighten access to disability pensions will help boost Hungary's historically low effective age of retirement (the fourth-lowest in the OECD in 2012; OECD, 2013b). Together with the gradual increase in the statutory retirement age to 65 by 2022, this will have a significant impact on the labor market participation of older cohorts, and it would be advisable to link future increases in the statutory retirement age to life expectancy. On the other hand, the establishment of a new early retirement scheme for women seems to be a step in the opposite direction, and should be phased out in order to achieve full policy coherence.

20.   **A few additional factors constraining older cohorts' participation are worth noting.** With regard to the tax system, the completely flat income taxation implies that changes in gross pension wealth during 60-65 years of age are strictly constant with earnings (OECD 2013b). In other words, incentives to retire are identical across income levels, with no allowance for low-income earners' relatively lower and high-income earners' higher propensity to stay active. In contrast, a number of OECD countries (including Austria, the Czech Republic and the Slovak Republic) provide better incentives for lower and middle-income workers to stay in work. Apart from re-considering the progressivity of the tax system, taxing pension benefits would also reduce financial incentives to retire.

21.   **In addition to financial incentives, older cohorts' activity is affected by a number of structural factors.** Just like young parents, older cohorts' labor market participation (in particular of women) is constrained by the lack of affordable child care, and the need for grandparents to support their children. Moreover, limited access to affordable long-term care also requires many potential labor market participants between 55 and 65 to take care of their ailing parents. Finally, the poor overall health status of the Hungarian population implies that many workers are afflicted by debilitating health conditions, in particular at advancing age. In sum, boosting older cohorts' productive participation in the labor market will also require addressing complex issues, such as greater access to affordable long-term care and the poor health status of the population at large.

Labor Demand

Tax policy

22.   **Taxes may contribute to depressing labor demand below the market clearing level.** Theoretically, labor taxes are expected to reduce both demand and supply of labor without creating "involuntary" unemployment. Evidence from OECD countries supports that high labor taxes may raise unemployment, particularly in the presence of labor market rigidities, such as minimum wages or decentralized unionization and wage bargaining (Bassanini and Duval 2006; OECD 2006). Labor market rigidities may also take the form of employment protection legislation (EPL). High obstacles
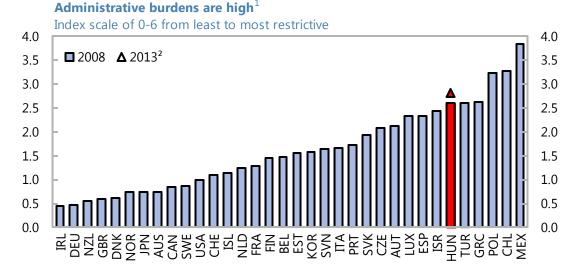
to laying off workers and significant severance pay requirements tend to affect mostly those that employers might perceive as "higher risk," such as career starters, the long-term unemployed, and women at a child-bearing age. Evidence from Hungary supports the notion that reductions in employer social contributions increase employment (Benedek et al. 2013; Cseres-Gergely et. al, 2012). [5]

23.   **Tax expenditures under the Job Protection Act (JPA) are aimed at lowering employer contributions and increasing the employment of targeted groups.** However, reportedly, 14 percent of total spending benefits higher income groups, and middle-aged low-income workers are excluded from the scheme (OECD 2014). While the administrative costs of reducing leakage have to be weighed against its potential benefits, there is some room for improvement (and savings of about 20bn HUF). For example, eligibility could be restricted to *lower-skilled* workers over 55 or *lower-skilled* returning mothers only. Highly skilled groups tend to have higher employment and participation rates in any case. Also, eligibility could be made contingent on a spell in unemployment, and applied to new hires only. Using income as a guide would be the simplest method to target such subsidies, and many countries successfully combine income-targeting with other criteria. In Hungary, including more lower-skilled workers of all ages within the eligible group could be a step in this direction.

24.   **Moreover, in the case of returning mothers, labor demand may not just depend on wage costs; arguably, it could be improved cost-effectively by reducing the length of the employment re-entry guarantee (3 years) and abolishing the accrual of paid vacations that the employer also has to cover.**

Business Environment

25.   **Another dampening effect on labor demand that remains to be addressed is the business environment.** The overall administrative burden on businesses and citizens in Hungary is high, and keeps growing amidst changes in policies and regulations.

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[5] Benedek et. al (2013) predicted reductions in employer social contributions under the Job Protection Act to increase employment by 1 percent. The authors also estimate that reinstating a simplified form of the employment tax credit (ETC) could boost employment by twice as much, or 2 percent (at only slightly higher fiscal cost). Cseres-Gergely et. al (2012) assess a more targeted predecessor program to the Job Protection Act, the so-called START extra program, and find a significant and positive effect for re-employment probabilities. Amongst other things, START extra provided a reduction in employer contributions for long-term, low-skilled unemployed over 50.

Administrative burdens are high[1]
Index scale of 0-6 from least to most restrictive

□ 2008   △ 2013[2]

IRL DEU NZL GBR DNK NOR JPN AUS CAN SWE USA CHE ISL NLD FRA FIN BEL EST KOR SVN ITA PRT SVK CZE AUT LUX ESP ISR HUN TUR GRC POL CHL MEX

Source: OECD (2013), OECD Product Market Regulation Statistics (database), July and I. Koske, I. Wanner, R. Bitetti and O. Barbiero (2014), "The 2013 Up-date of the OECD Product Market Regulation Indicators: Policy Insights for OECD and non-OECD Countries", OECD Economics Department Working Papers, forthcoming.
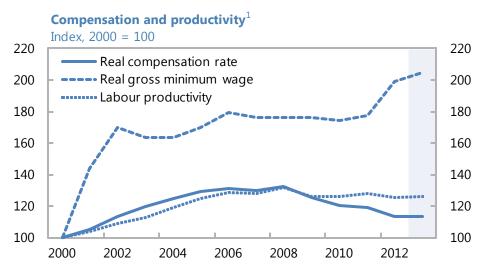
1. The product market regulation indicator for administrative burdens is composed of the following three elements (equal weights): administrative burdens for corporations, administrative burdens for sole proprietor firms and sector specific administrative burdens (road transport and retail distribution).

2. Preliminary data calculated on the basis of the 2008 methodology for purposes of comparability. For more details, see Koske et al. (2014) which provides the 2013 indicators with a revised methodology.

26. **The 2013 Global Competitiveness report ranked Hungary 140th among 148 countries with regard to the perceived regulatory burden (World Economic Forum, 2013). This has been compounded by policy uncertainty.** In particular, businesses face burdensome and unstable rules with regard to taxation. It is estimated that SMEs spend about 277 hours a year complying with tax obligations (World Bank, IFC and PwC, 2013)-roughly 50 percent more than the OECD average. Specifically, SMEs face a whole range of taxation options, which are not particularly transparent, and perceived policy uncertainty is keeping small businesses from switching to newly established regimes despite financial incentives. Apart from creating more policy predictability to boost overall labor demand in the economy, the government could support employment creation and investment in the SME sector by harmonizing the SME tax system with the PIT and CIT regimes, and giving small enterprises more incentives to formalize and to grow.

Minimum Wage

27. **With regard to minimum wages, their impact on employment remains subject to debate (Card and Krueger 1997; OECD 2006; Schmitt 2013), and the purpose of minimum wage legislation is primarily distributional.** Setting the right level can be a balancing act, as minimum wages that are set too high can theoretically "price" lower productivity workers out of the labor market. Key factors in assessing the level of the minimum wage are the current wage distribution (especially the median wage of vulnerable groups) and prevailing labor market

conditions (for example, unemployment of low-skilled workers). A practical "rule of thumb" suggests that it should remain below one-third of average wages for countries with high unemployment among the young and low-skilled—or those potentially perceived as "low productivity" workers (Rutkowski 2003). In Hungary, historical increases in the minimum wage were indeed found to reduce the demand for labor. Kertesi and Köllő (2003) and Elek at al. (2012) study the large increase in minimum wages in 2001-02 and find a significant and negative impact on employment, which was particularly pronounced for the young, the unskilled, and those living in disadvantaged regions.

28.   **Over the past years, increases in the minimum wage in Hungary have surpassed growth in average wages and productivity. Minimum wages now account for just under half of average wages in the economy.[6]** This may be having a negative impact on vulnerable job-seekers, such as the low-skilled or young; employment-creation in relatively disadvantaged regions; and labor market formality. The current labor code in principle permits a differentiation of minimum wages, such as exists in many countries for certain groups (youth) or regions. For example, a youth sub-minimum wage at 75 percent of the adult minimum wage could be considered. Going forward, minimum wage increases should be kept in line with changes in average wages and productivity, and reflect prevailing labor market conditions.

Compensation and productivity[1]
Index, 2000 = 100

Source: OECD (2013), OECD Economic Outlook: Statistics and Projections (database), December.

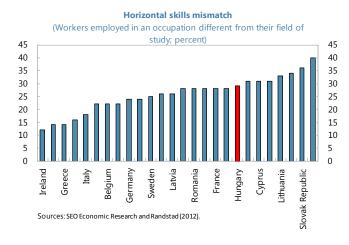1. Real compensation rate and labour productivity of the total economy. Projections for 2013.

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[6] The discussion focuses on the regular minimum wage. Hungary also applies a "skilled workers" minimum wage to set a floor on wage underreporting.
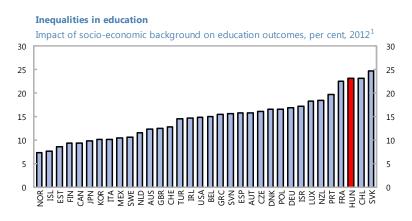
Reducing Labor Market Mismatches

Skills Gaps

29.   **The skills gaps in Hungary are high (see section B). Primarily, this is reflected in the oversupply of low-skilled workers.** But also many skilled workers' field of study does not match the requirements for their current job, possibly due to a lack of geographical mobility (discussed below). The oversupply of low-skilled workers, especially among older cohorts, is in part the lingering impact of the economic transition. However, skills mismatches have worsened over the past decade, highlighting the education system's failure to adequately prepare new cohorts for the labor market (OECD 2014). Inequalities in education are very high.

Horizontal skills mismatch
(Workers employed in an occupation different from their field of study; percent)

Sources: SEO Economic Research and Randstad (2012).

Inequalities in education
Impact of socio-economic background on education outcomes, per cent, 2012[1]

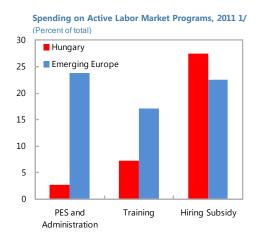Source: OECD (2013), PISA 2012 Results: Excellence through Equity (Volume II).
1. Percentage of variance in performance explained by the Programme for International Student Assessment (PISA) index of economic, social and cultural status (ESCS). R-squared x 100.

30.   **In response, much stronger employments services with much more emphasis on individualized job-search assistance and tailored training programs in close collaboration with the private sector could help.** More fundamentally, there is a need to improve the equity of the public education system, as well as the availability of vocational training opportunities. The authorities have taken steps in the right direction by adopting the Youth Guarantee scheme and using EU funds to boost training programs in the 2014 budget. Also, they intend to improve public education. However, to date the focus of employment policies seems to remain squarely on the public works program, at the expense of funding for the Public Employment Service (PES) and other ALMPs.

ALMPs

31.   **In 2011, total spending on labor market interventions amounted to only 1 percent of GDP, of which roughly one third was funding for ALMPs.** Within this limited envelope, funding for the PES had shrunk dramatically. At the same time, expenditure on the public works program (of which more than 80 percent is spending on wages) has expanded significantly. In 2014, the public works program is expected to cover about 400 thousand workers, accounting for 10 percent of total employment in the economy (see Box 2 of the accompanying Staff Report).

Spending on Active Labor Market Programs, 2011 1/
(Percent of total)

1/ Data for Emerging Europe refers to 2009

32.   **Lower spending on employment services is in line with the substantial reduction in the duration and level of unemployment benefits (Box 1).** However, the case-load of the PES has increased disproportionally, reaching 145 job-seekers per PES staff member in 2012 (OECD, 2014). In comparison, the average case load in Germany, which has also relied on significant reductions in benefits to incentivize labor market participation, is 47. In addition, the duration of benefits is arguably too short to allow for a proper job-search or an effective intervention by the PES. As discussed above, in particular young job-seekers would be better served by more prolonged, personalized assistance, combined with effective training or targeted wage subsidies. Strengthened, "Nordic"-style ALMPs could be financed by phasing out the public works program, unless its benefits can be rigorously documented. While data is scarce, official figures indicate that only around 13 percent of participants are able to find private sector work within 180 days of leaving the program. This raises questions about the program's overall cost effectiveness.

33.   **The track records of public works programs beyond their use as short-term crisis measures are poor—in Hungary and beyond.** For example, Card, Kluve and Weber (2010) examine 199 ALMP evaluations and find the impact of training and job-search assistance to be positive, while pubic employment has a negative impact. In Hungary, Köllő and Scharle (2012) find public works programs in Hungary between 2003 and 2008 not to reduce long-term unemployment. Also, Csoba and Nagy (2012) evaluate Hungarian training, public works and employment subsidy programs between 2009 and 2010: they find that participants of the wage subsidy program were significantly more likely to find jobs 6–12 months after the program (public works programs had a significantly negative impact). While all these studies are limited in absence of natural experiments approximating randomized trials, the recurrent finding of a potentially negative impact of public works programs should give reason for pause.

34.   **Anecdotal evidence suggests that the public works program in Hungary may indeed be detrimental to people seeking regular employment.** The 8-hour workdays in the (compulsory)
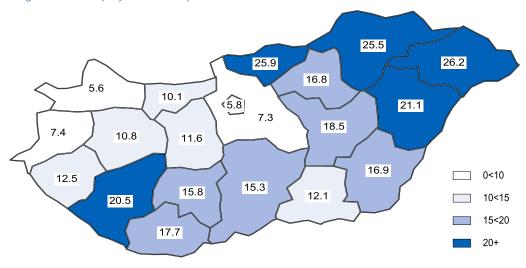
program provide little chance for an effective job search. While training programs exist, they are generally contracted out and (by informal accounts) woefully lacking (OECD 2014). Finally, the stigma for former public works participants is likely to be high, further complicating their uphill battle to exit the system. While the pure activation component may be beneficial, this could also be accomplished through strict conditionality during more extended period of unemployment benefits and effective ALMPs.

Geographical Mismatches and Mobility

35.   **Finally, unemployment in Hungary has a strong regional profile. This calls for efforts to boost job creation in relatively disadvantaged regions, and enhancing the mobility of the labor force such that workers can take jobs elsewhere.** The government created low-tax zones to incentivize job-creation in particular regions, and provides re-location subsidies. However, more needs to be done. On the labor demand side, minimum wages could be differentiated along regional lines in addition to the existing tax preferences and decentralized wage bargaining. On the labor supply side, policies facilitating greater mobility should encompass improvements in public transport beyond urban centers and incentives for a more flexible housing market.

Unemployment rate by county

Registered unemployment rates, percent, 2012   1

Source: OECD (2014)

1. Registered jobseekers in percent of economically active population aged 15-64.

D.   Conclusions

36.   **Recent reforms in Hungary have been relatively successful in activating potential labor market participants, especially those that had been covered by early retirement or disability pensions.** Also, targeted reductions in the high contribution burden on employers under the Job Protection Act are a step in the right direction. Yet overall policy coherence is still lacking and more needs to be done to help increase the low participation and employment rates.

37.   **Apart from considering some of the options described in Section C, it is critical to carry out rigorous and independent research to evaluate policy interventions regularly—and for policy-makers to adjust or replace programs based on their effectiveness.** No single approach or too narrow a focus will be sufficient to address the many issues hampering participation and employment on both the labor demand and supply side, as is also evident in the host of measures generally employed in advanced economies. In the end, long-term improvements in labor market outcomes will also depend on complimentary structural reforms, ranging from improvements in health care and public education to changes in cultural preferences and attitudes towards gender roles and child-rearing.

Table 1: Targeted Labor Market Interventions

Target group	Tax system	Benefits system	Labor market regulations	ALMPs
Low-skilled	General progressivity; Employer and employee tax credits	Increased "in work" benefits; conditionality	Flexible minimum wages	Vocational training; job-search assistance; wage subsidies
Long-term unemployed	Employer and employee tax credits	Increased "in work" benefits; conditionality	Flexible minimum wage	Vocational training; job-search assistance; wage subsidies
Youth	Employer tax credits	Increased "in work" benefits; conditionality	Flexible minimum wage	Vocational training; job-search assistance; wage subsidies
Second earners	Individual taxation; no spouse allowance; employee tax credits			Job-search assistance
Parents	Employee tax credits	Job guarantee; flexible parental leave; affordable child care	Flexible employment options	Job-search assistance; wage subsidies
Older workers	Make pension benefits actuarially neutral to retirement age; tax pensions	Restricted early retirement		Vocational training; job-search assistance; wage subsidies

References

Bassanini, A. and R. Duval (2006), "Employment Patterns in OECD Countries: Reassessing the Role of Policies and Institutions", *OECD Social, Employment and Migration Working Papers*, No. 35; and *OECD Economics Department Working Papers*, No. 486.

Benczur, P., G. Katay and A. Kiss (2012), "Assessing Changes of the Hungarian Tax and Transfer System: A General-Equilibrium Microsimulation Approach," MNB Working Papers 2012/7, Budapest.

Benedek, D., G. Kátay and Á. Kiss (2013), "Microsimulation as a Tool for Assessing the Impact of Tax Changes", in K. Fazekas et al. (eds.) (2013), *The Hungarian Labour Market, 2013*, Centre for Economic and Regional Studies, Hungarian Academy of Sciences and National Employment.

Berger, Lawrence M. and Waldfogel, Jane, (2004), Maternity leave and the employment of new mothers in the United States, *Journal of Population Economics*, 17, issue 2

Blanchard, O., F. Jaumotte and P. Loungani (2013), "Labor Market Policies and IMF Advice in Advanced Economies During the Great Recession," IMF Staff Discussion Note 13/02, Washington, D.C.

David Card & Alan B. Krueger (1997) "Myth and Measurement: The New Economics of the Minimum Wage," Princeton University Press

Card, D., J. Kluve and A. Weber (2010), "Active Labour Market Policy Evaluations: A Meta-Analysis", *NBERWorking Paper*, No. 16173, National Bureau for Economic Research

Cseres-Gergely, Z. (2008), Incentive effects in the pension system of Hungary. In: Cseres-Gergely, Zs., Fazekas, K. and Scharle, Á. (eds.): The Hungarian labour market. Review and analysis. 2008. In focus. Social welfare and labour supply. Institute of Economics, HAS–Hungarian Employment Foundation, Budapest

Cseres-Gergely, Zs., Földessy, Á. and Scharle, Á. (2012), "Evaluating the impact of a well-targeted wage subsidy using administrative data'" BWP, IE-HAS, forthcoming

Csoba, J. and E. Nagy (2012), "The Evaluation of Training, Wage Subsidy and Public Works Programs in Hungary," in K. Fazekas and Kezdi (eds.) (2012), *The Hungarian Labour Market, 2012*, Centre for Economic and Regional Studies, Hungarian Academy of Sciences and National Employment

Elek, P., J. Kollo, B. Reizer and P. Szabo (2012), "Detecting Wage Under-reporting Using a Double Hurdle Model," Budapest Working Papers on the Labour market, BWP 2012/1, Budapest

Jaumotte, F. (2003), "Female Labour Force Participation: Past Trends and Main Determinants in OECD Countries", *OECD Economics Department Working Papers*, No. 376.

Köllő, J. (2009): A pálya szélén. Iskolázatlan munkanélküliek a posztszocialista gazdaságban. (On the sidelines: Uneducated unemployed in the post-socialist economy) Osiris, Budapest.

Köllő, J. (2012): Reconciliation of work and family life– the impact of child allowances, in Fazekas, K. and Scharle, Á. (eds.): From pensions to public works. Hungarian employment policy from 1990 to 2010. Budapest Institute for Policy Analysis and Institute of Economics, Hungarian Academy of Sciences, Budapest,

Köllő, J.–Nacsa, B. (2005): Flexibility and Security in the Labour Market. Experiences from Hungary. ILO Flexicurity paper 2004/2. International Labour Office, Budapest.

Köllő, J. and A. Scharle (2012), The Impact of the Expansion of Public Works Programs on Long-Term Unemployment, in K. Fazekas and Kezdi (eds.) (2012), *The Hungarian Labour Market, 2012*, Centre for Economic and Regional Studies, Hungarian Academy of Sciences and National Employment

Lovasz, A. and A. Szabo-Morvai, (2013), Does Childcare Matter for Maternal Labor Supply? Pushing the Limits of the Regression Discontinuity Framework, Budapest Working papers on the Labor Market 2013/13

Kertesi, G. and J. Köllő (2003), "Fighting 'Low Equilibria' by Doubling the Minimum Wage? Hungary's Experiment", *IZA Discussion Paper*, No. 970, Institute for the Study of Labour.

Ladányi, T. and R. Kierzenkowski (2012), "Work Incentives and Recent Reforms of the Tax and Benefit System in Hungary", *OECD Economics Department Working Papers*, No. 944, OECD Publishing

OECD (2006), *OECD Employment Outlook*, OECD Publishing, Paris

OECD (2011a), "Reducing Barriers to Parental Employment" in *Doing Better for Families*, OECD Publishing, Paris

(OECD 2011b) *Taxation and Employment,* OECD Tax Policy Studies No. 21, OECD Publishing, Paris

OECD (2013a), *Education at a Glance 2013: OECD Indicators*, OECD Publishing

OECD (2013b), *Pensions at a Glance*, OECD Publishing, Paris.

OECD, (2014) *OECD Economic Survey: Hungary*, OECD Publishing, Paris

Randstat (2012), "Into the Gap: Exploring Skills and Mismatches", *SEO Report*, No. 2011-56, SEO Economic Research.

Rutkowski, J. (2003), "The Minimum Wage: Curse or Cure?"mimeo, The World Bank, Washington D.C.

Schmitt, J. (2013), "Why does the Minimum Wage have no Discernible Effect on Employment?" Center for Economic and Policy Research, Washington D.C.

Szabó-Morvai, Á. (2011): Labor market effect of child benefits: The Case of Hungary, mimeo.

Toth, C. and P. Virovacz, (2013), "Winners and Losers: An Assessment of the Hungarian Flat Tax Reform with Microsimulation," *Public Finance Quarterly*, State Audit Office of Hungary, vol. 58(4).

 World Bank, IFC and PwC (2013), "Paying Taxes 2014: the Global Picture," World Bank, IFC and PricewaterhouseCoopers.

World Economic Forum (2013), *The Global Competitiveness Report 2013-2014*.