Goulash Labour Market Structural Reforms: Hungary, 1986-2016*

Nauro F. Campos
Brunel University London,
ETH-Zurich and IZA-Bonn
nauro.campos@brunel.ac.uk

This draft: June 2019

This paper investigates structural labour market reforms in Hungary from 1986 to 2016, a period encompassing the fall of communism, EU accession in 2004 and the global financial crisis. Using the narrative approach, we identify three main labour reforms: in 1992 and 2002 aimed at increasing and in 2012 aimed at decreasing employment protection. We study their effects using a unique data set of about 6 million Hungarian wage earners. We find that (1) the skill premium almost doubled from 6.4% in 1986 to 12.3% in 2016, but peaking in 2004; (2) the gender wage gap decreased to a third with the difference in log wages declining from 0.31 in 1986 to 0.13 in 2004, with no changes thereafter; and (3) gender discrimination practically halved as the unexplained component from the Oaxaca decomposition of the difference in log wages decreased from .27 in 1989 to .15 after 2004.

Keywords: labour markets, Hungary, structural reforms, skills, gender

* I thank László Bruszt, Fabrizio Coricelli, Romain Duval, Michael Ganslmeier, Yuemei Ji, Jeffrey Nugent and István Székely for valuable comments on a previous version. Financial support from the ESRC grant no. ES/P000274/1 is gratefully acknowledged. This paper would not have been possible without the support of Janos Köllo and the assistance of Balazs Munkacsy from the Institute of Economics of the Hungarian Academy of Sciences in Budapest. I am entirely responsible for all remaining errors.

1. Introduction

Labour market reforms are notoriously difficult to study, especially when compared to other reforms such as trade liberalization or product market deregulation. Labour reforms have a broader range in that they directly affect the whole working population while, e.g., trade reforms directly affect mostly the tradables sector. This may explain why labour reforms are extensively debated, often hard-fought, approved in bundles, and often contain agreed upon implementation lags. Their effects are wide, deep and take a long time to set in.

This paper investigates structural labour market reforms in Hungary from 1986 to 2016. This is an important period because it encompasses the collapse of the Soviet Union, EU accession in 2004, and the global financial crisis. By the same token, Hungary is a country attracting huge interest because of its role in the recent populist wave (Mudde 2017).

Using the narrative approach by tracking changes in labour laws, our analysis identifies three main labour market reforms in Hungary: in 1992 and 2002 aimed at increasing, and in 2012 at decreasing, employment protection. We then study the effects of these reforms using a unique data set of Hungarian workers. We find that (1) the skill premium almost doubled from 6.4% in 1986 to 12.3% in 2016, but peaking in 2004; (2) the gender wage gap decreased to a third with the difference in log wages declining from 0.31 in 1986 to 0.13 in 2004, no changes thereafter; and (3) gender discrimination practically halved as the unexplained component from the Oaxaca decomposition of the difference in log wages decreased from .27 in 1989 to .15 after 2004.

The paper is organized as follows. Section 2 provides background on Hungary and details on the implementation of labour market reforms. Section 3 introduces our data set and methodological and estimation features. Section 4 discusses our estimates of the changes in returns to education and gender between 1986 and 2016. Section 5 concludes.

2. Labour market reforms in Hungary

The objective of this section is two-fold. One is to briefly describe the main macroeconomic developments in Hungary during the period 1986 to 2016 and the other is to identify and discuss the key relevant labour market structural reforms.

Hungary is one of the post-communist countries with a long history of pro-market reforms as well as of gradualism. The root of these early reforms may be found in the Hungarian Uprising of 1956 which to be quelled required a Soviet military intervention. For the 32 years from 1956 until his retirement in 1988, the country was led by János Kádár who is credited with the implementation of "goulash communism" so named because it was concerned more about household consumption than say investment in heavy industry (Benczes 2016.) In 1968 Kádár implemented the New Economic Mechanism (NEM), an extensive reform program that liberalised international trade and allowed for much freer forms of enterprise (cooperatives) and the emergence of a large 'second economy,' allowing peasants and workers to produce agricultural goods for the market. NEM worked well until the 1973 oil shock when large parts of these reforms were halted. They were re-started only in the early 1980s despite concerns about rising external debt.

Economic liberalization preceded political change. In early 1989, the Hungarian government decided to turn off the power of the electrified wall borders with Austria and in late Summer allowed Hungarian citizens to travel to Western Europe. In October 1989 Parliament passed legislation for multi-party parliamentary election. These took place in 1990 resulting in a center-right coalition government under Prime Minister (PM) Antall. The 1994 election produced a center-left coalition under PM Horn, who incidentally was the last communist foreign affairs ministry, responsible for cutting down the wall in the Summer of 1989. It was followed by

a center-right coalition led by PM Viktor Orbán between 1998 and 2002, by a center-left coalition from 2002 to 2006 (Medgyessy-Gyurcsány), by another center-left coalition from 2006 to 2010 (Gyurcsány-Bajnai) and then finally by three center-right coalition governments all led by PM Orbán in 2010-2014, 2014-2018, and 2018 to the present.

Hungary enjoyed an initial advantage in its transition from centrally planned to a market economy: even under planning, parts of the economy were liberalized. Small firms could be privately owned and operated (Kornai, 1986). Even considering the propitious initial conditions, the Hungarian private sector developed fast: in 1998 it accounted for 80 percent of GDP. Compared to other Visegrad countries (i.e., Czech Republic, Poland and Slovakia), the performance of the Hungarian economy was slightly smoother. Halpern and Wyplosz (1998) note that the real shock came not with the fall of the Berlin Wall but later with the collapse of CMEA and the Soviet Union in 1991. Output fell less than in these other countries although growth rates were also lower. The period 1990 to 1994 marks what has been called by Kornai (1994) the "transformational recession" as output declined by around 20 percent and industrial production by 35 percent (Figure 1a). Moreover, the country faced large fiscal and current account imbalances (the current account deficit rose to 10 percent GDP in 1993 and 1994).

In 1995, the Bokros package, the biggest fiscal austerity programme in post-communist Hungary, was launched. Inter alia, it comprised import surcharges, a 9 percent devaluation of the Hungarian forint (plus the introduction of a crawling peg exchange rate regime), a rigid wage policy and reduction of government expenditures. This led to government deficit and unemployment declines and the acceleration of economic growth. Real wages fell by 26 percent between 1988 and 1996, which was partly a consequence of rigid wage policies during the stabilization program and the persisting two-digit inflation. This was coupled with the

intensification of a successful case-by-case privatization that shored up a large inflow of foreign direct investment (Kaminski, 2000; Brown et al 2016).

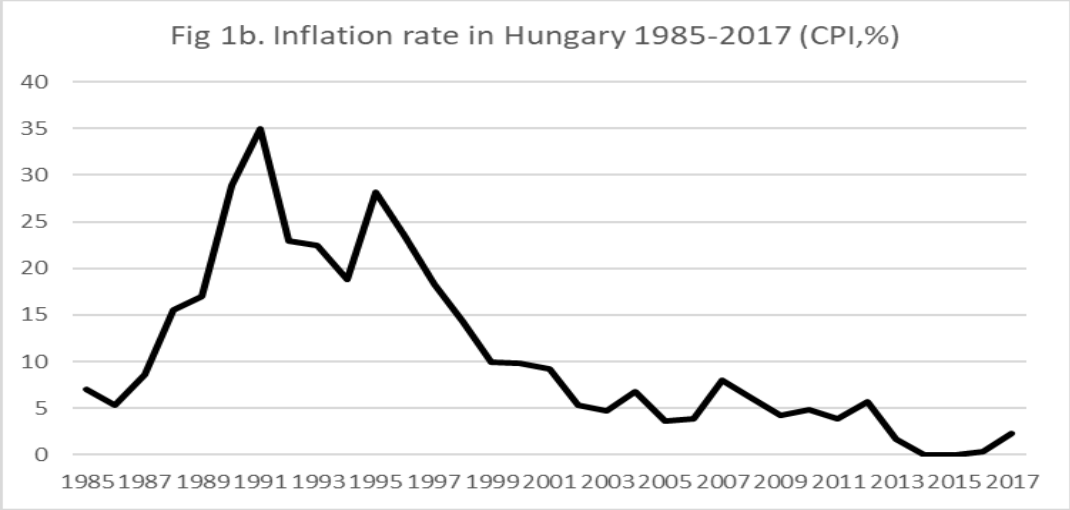
Thanks to various reforms under communism, the change in relative prices was not as dramatic as in other former centrally planned economies. Inflation reaches its highest value in 1991 (35 percent) and then another peak of 28 percent in 1995. In the following years it continuously declined and has, since 1998, never again reached double-digits (Figure 1b).

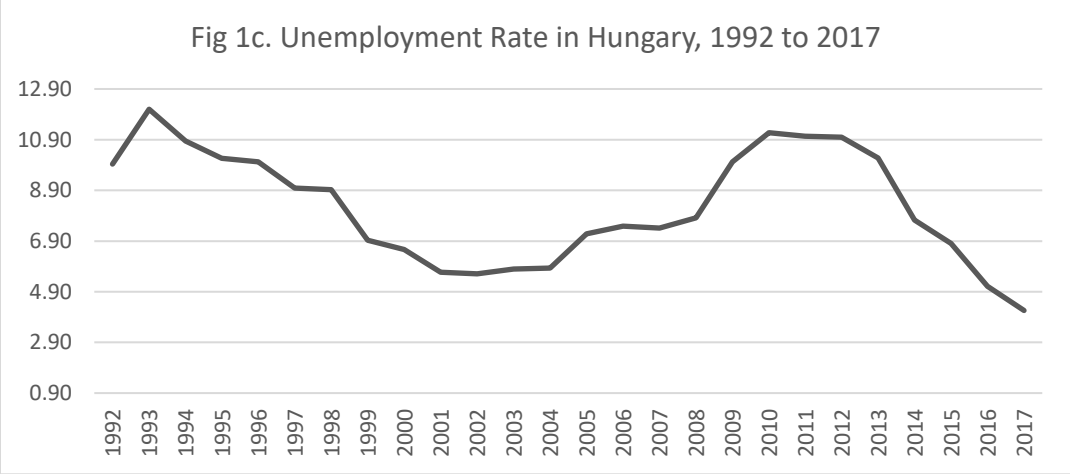
Although Hungary was unique in starting the transition with a legal framework in place to cope with unemployment (Boeri and Pulay, 1998), it does not differ from others in that the disappearance of the strict central planning wage setting system was swift (Székely and Ward-Warmedinger 2018).[1] Figure 1c shows that unemployment was negligible in the pre-transition years, but increased rapidly, reaching peak in 1993 (705,000 or 12.9 percent registered, 11.9 percent ILO/LFS unemployment rate).[2] The unemployment rate declined from 1994 until EU accession. Part of the explanation is that many workers left the labour force (e.g., early retirement) while training programs were introduced (Boeri and Terrell 2002.)[3] The unemployment rate of women was lower than that of men but male unemployment decreased more rapidly than female unemployment, with the highest incidence of unemployment among younger workers. Unemployment rose again after EU accession in 2004 and particularly so with the global financial crisis in 2008 (Valentinyi 2012). After 2013 it declined to levels unseen since before the transition started.

[1] The government's attempts at setting-up collective bargaining had limited success: "The new Hungarian system of wage setting is based on the principle of bargaining freedom, but actual wage evolution is far more dependent on employers' decisions and the immediate impact of market forces than on collective agreements with low coverage and poor contents" (Koltay, 2002, p. 61).

[2] See Commander et al. (1995) on the relationship between unemployment and restructuring in Hungary.

[3] O'Leary (1997) studies the impacts of active labor market policies in Hungary, in general, and specifically the impact of retraining and public service employment (PSE) on re-employment and earnings.





Source: Author's calculations using data from Hungarian Central Statistical Office.

Declining labour force participation is an important feature of the Hungarian labour market. The potential supply of labour has been declining in recent history. The number of people available for work has been influenced by many factors. Vodopivec et al. (2005) compute an index of the generosity of unemployment benefits for Central and Eastern European countries in the 1990s and find that these benefits are the most generous in Hungary and Slovenia, and the least generous in Estonia. The number of working pensioners has also declined. Over 600 000 people who are under the retirement age and another 320 000 persons of retirement age left the labour force in the first half of the 1990s. The age of retirement was 55 for women and 60 for men until a pension reform in 1997 introduced gradual increases in the retirement age for both men and women. After the changes, retirement age increased to 62 for both males and females. Note the decline in labour force participation slowed down by the end of the 1990s.

Kattuman and Redmond (2001) provide an analysis of the early rise of income inequality in Hungary. They find that in Hungarian fashion, inequality rose only moderately (irrespectively of the measure of inequality) but followed a more erratic behavior: increase in 1987-89, decrease between 1989 and 1991, and rise again afterwards (when mean income decreased, but so did dispersion). Most of the changes in the distribution of income occurred at the low and high tails.[4] Income taxes helped to reduce inequality in the early transition years, but their impact was eroded as income from sources other than employment became more important, e.g. transfers and benefits became important sources of income for most Hungarian households in those years.

Structural reforms in the transition were seldom implemented alone (Campos and Horvath 2012). It is important to keep in mind the distinction between structural reforms that

[4] Jarvis and Pudney (1995) study redistributive policies in the early Hungarian transition. They argue that although a progressive income tax (PIT) and a value added tax (VAT) were introduced in 1988, their redistributive impact has been reduced by the successive reforms to a point that inequality increased between 1988 and 1992 (to a level comparable to the U.K.'s).

affect the labour market (like privatisation and trade liberalization) from those designed to change it directly. Even so it remains quite difficult to pinpoint major reforms specially when one is interested in distinguishing between *de jure* and *de facto* reforms.

Here we focus on *de jure* reforms and do so with the narrative approach that has been used previously in this literature.[5] We apply it to the most comprehensive compendium of labour laws we are aware of, namely the International Labour Organisation (ILO) NATLEX depository.[6] The way we use the narrative approach in this paper is to collect and read all labour laws that were enacted by Hungarian governments from 1989 to 2017 following Campos and Nugent (2018) focus on working time, employment contracts, hiring and firing legislation. We then establish whether the intended effect of each law is either to increase or to decrease employment protection. Finally, we try to identify periods in which there is more legislative activity in this area and we also try to identify the overall direction or intended effects of these efforts. Below we provide various illustrative examples.

Using the narrative approach, we identify three main clusters of labour market reforms in Hungary: in 1992 and 2002 aiming at increasing, and in 2012 at decreasing, employment protection. The first and third of these reforms were enacted by center-right governments, while the 2002 reform was enacted by a center-left government. In 1992 a new Labour Code was adopted, and it was in force until 2012 when a new Labour Code came in the immediate aftermath of the 2011 Constitution. Although the period of the 2002 reform may be remembered by the doubling of the minimum wage between 2001 and 2002, there were various other

[5] Ciminelli et al. (2018) and Duval et al. (2018) offer measures of reform using the narrative approach but unfortunately they do not include Hungary. Campos and Nugent (2018) also use the narrative approach to labor market reforms and do include Hungary but the frequency of their indexes is not annual, but 5-year averages instead.
[6] Cf. https://www.ilo.org/dyn/natlex/natlex4.countrySubjects?p_lang=en&p_country=HUN

important changes.

It may be surprising that only the third and last major reform we identify aims at lowering the extent of employment protection in Hungary. One would expect that the transition from communism to a market economy entails a decrease in employment protection. Some would argue that a similar expectation should apply to such a structural reform, that is, that it would mostly involve liberalizing the labour market. But this is not what we see in Hungary until 2012. One example that illustrate this unexpected finding is that the 1992 Labour Code increased the annual leave entitlement, from 12 to 20 working days.

The 1992 reform is perhaps the most significant of the three in terms of magnitude. It was mostly driven by changes in working time, in hiring and in firing legislation. Major changes occurred regarding the regulation of working time: there was an increase in annual leave entitlements, in public holidays entitlements, in overtime work premia, in weekend working premia, regarding stricter limits on overtime working, and a reduction of normal working hours (from 48 to 40 per week). As for hiring and firing, the 1992 reforms included an increase in the legally mandate notice period (from 15 to 30 days), redundancy compensation, and the imposition of various procedural constraints on dismissals. In terms of forms of employment, the main change was that a five-year maximum limit was set for fixed-term contracts, while no such limits existed before 1992.

The 2002 reform is mostly driven by the changes in employment contracts. Chiefly among them are the laws that gave part-time workers and fixed-term workers the right to equal treatment with full-time workers. Because alternative labour contracts were not common in the early years of the transition from communism, most of the changes from the 1992 reform applied to full-time workers. The 2002 reform broadly extend these rights.

Although it is interesting that the OECD employment protection legislation indicator corroborates the 2002 but not the 1992 reform we identify in this paper, our choice of 2002 needs some more explanation. In 2002 a narrow election victory led to a centre-left government coalition that proposed these important laws when coming into office, but they were only approved in 2003 due to the government's tight parliamentary majority. This 2002 reform is also noteworthy because it contrasts with the "goulash populist" approach (Benczes 2016) of the previous center-right government coalition led by MP Orbán from 1998 to 2002 which doubled the minimum wage after shortening the maximum duration of unemployment benefits and making eligibility more restrictive (e.g., requiring participation in public works.)

It is also important to note that between the 1992 and the 2002 reform there were reforms, but they were mostly related to non-discrimination. In 1997, Decree 38 amended the rules (in place since 1968) regarding non-discrimination in employment regarding gender, age, nationality, race, religion, etc. The other important change happens in 2001, when Act 60 transposes the Protocol to the UN Convention on the Elimination of All Forms of Discrimination Against Women into Hungarian law. Notice that there are, in NATLEX, only six laws under equality of opportunity and non-discrimination, but they are dated before 2001 and all except the two mentioned above are related to ethnic minorities.

The 2012 reform is encapsulated by the New Labour Code that followed from the new 2011 Constitution. Differently from the previous two reforms, the 2012 aims at reducing the level of employment protection and the main components of this reform were firing legislation and working time regulations. The 2012 Labour Code halves the premium for weekend working and increases by a quarter the legal limit for overtime work (in hours). As for dismissals, the

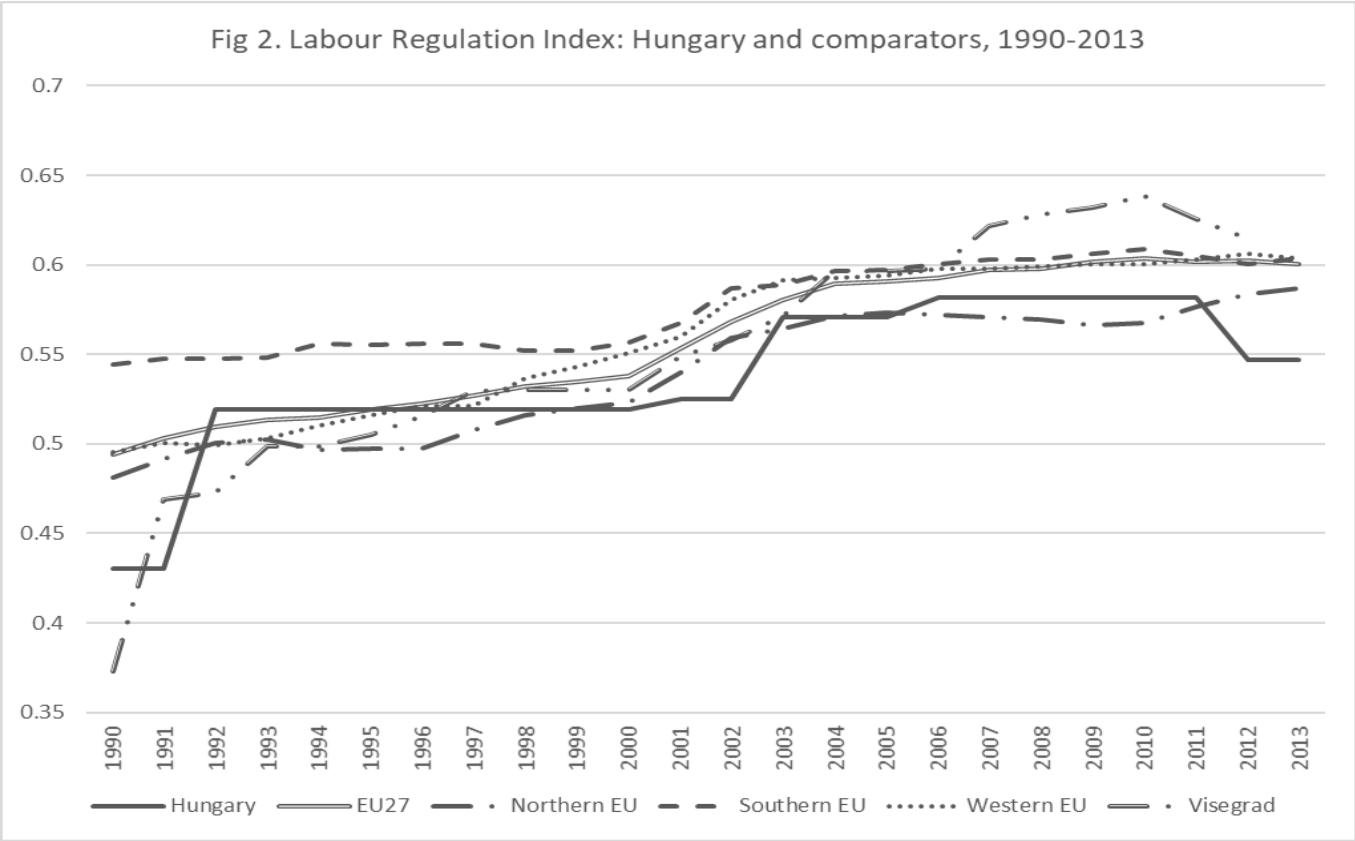
major change is that it eliminates the disciplinary procedures requirements established in 1992 and that employee's right to contest dismissal were curtailed.

Adams et al (2016) offer a quantification of the ILO data for 117 countries from 1970 until 2013. Higher values of their index reflect more labour regulation. They cover five main areas (full or part-time contracts, hiring, firing, representation/unions and strike legislation) with a total of forty quantitative components. Originally these are all on a 0 to 1 scale, so we simply average them and think of reforms as changes over time in this index. The index for Hungary broadly confirms the three main reforms we identified using the narrative approach here. It suggests that the reforms we identify for 1992 and 2002 were aimed at increasing regulation, while the one for 2012 aimed at decreasing regulation, and that the first reform is "bigger" than the other two which are of comparable "size" although of opposite "directions." Yet an important advantage of this measure is that it allows for cross-country comparisons. Figure 2 shows it for Hungary and for relevant comparator groups of EU (excluding Hungary), Visegrad, Northern, Southern and Western EU averages for all the years for which the index is available.[7]

In comparative perspective, the level of employment protection in Hungary seems to have been consistently low. Except for the years between 1992 and 1995, the values of their index for Hungary have been substantially below the EU average confirming that indeed the Hungarian labour market seems to be less regulated or more flexible when compared to the EU average. The index shows that for most of the period between 1990 and 2013 the Southern EU group had the highest levels of employment protection. After the global financial crisis there seems to have been some convergence between Southern and Western EU countries, although

[7] We define Northern EU as Sweden, Finland, Latvia, Lithuania, Estonia and Denmark; Western EU as Belgium, France, Ireland, Luxembourg, Netherlands and UK; Southern EU as Italy, Spain, Greece, Malta, Cyprus and Portugal; and Visegrad as Czech Republic, Slovenia, Slovakia and Poland.

the Northern EU countries still show a lower level of employment regulation and the average value of their index for Hungary resembles this latter group more than any of the others.



Source: Author's calculations using data from Adams et al (2016)

3. Data and methodology

The data used in this paper are from the Wage and Earnings Survey of the National Labour Center in Hungary. Its repeated cross-sections are narrow and long: they cover a handful of variables for a very large number of wage earners. They contain information on wages, location, education, age, gender and other demographic details. It is a unique, representative and carefully recoded data that starts in 1986 and in three-year intervals ends in 2016. The frequency of the

data collection became annual in the late 1990s but for convenience we use it for estimation at three-year intervals. The years we use in the estimations are 1986, 1989, 1992, 1995, 1998, 2001, 2004, 2007, 2010, 2013 and 2016. They cover the late communist and early transition periods, the years before and after the accession to the European Union (in 2004) as well as the period before and after the global financial crisis. With assistance from the National Labour Center and the Hungarian Central Statistical Office we ensured that variables were coded consistently over time which involved substantial recoding of the pre-1992 data (Campos and Zlabkova 2001).

Wage equations are estimated using the standard Mincer specification:

$$\ln(w_i) = \beta_1 S_i + \beta_2 E_i + \beta_3 E_i^2 + \beta_4 G_i + \beta_5 X_i + \varepsilon_i \qquad (1)$$

where *i* denotes the individual, w is wages, S is years of schooling (or type of education), E is potential labour market experience, G is gender, and X contains a set of variables to control for industry, institutional, and spatial differences.

The wages refer to their monthly value (in forint). They are the sum of the official base wage plus other payments such as overtime work, shift work, rewards and other special payments.

We use two measures of schooling. The first is a vector of six dummy variables that denote the highest type of schooling completed. The school types include primary, three types of secondary (vocational, technical, and general), college, and university. The second measure of schooling is an estimate of years of school attainment. This is created by converting the data on highest school type completed into years of schooling. Its average value increased from 9.6 years of schooling in 1986 to 11.9 years in 2004 to 12.0 years in 2010 to finally 12.2 years in 2016.

Potential labour market experience is constructed by subtracting the number of years of schooling from the age of the wage earner. Average age in the sample was 38.2 years in 1986.

The average age has risen in every single year. It reached 41.5 in 2004 and 43.0 in 2016. Potential experience shows a similar trajectory except for the initial years. The average (weighted) potential labour market experience was 22.5 years in 1986, but it declines slightly to 22.3 in 1989 which is the year of the fall of the Berlin Wall and then it declines again to 21.6 in 1992 from which point it starts to increase. It reaches 23.6 years of potential experience for the average wage earner in 2004 and finally 24.8 in 2016.

The variable for gender is to control for differences across the sexes. Note the share of females increases throughout the period of analysis. In the 1986 sample, 43.1 percent of the wage earners were women. This (weighted) share increases to 47.8 in 1992, and then to 50.6 percent in the year Hungary joined the European Union (2004). It has since declined to 48.9 in 2016.

The set of control variables designated by X includes variables to account for important spatial and sectoral differences. It has a set of industry dummies as well as a dummy variable for large firms (those with more than 300 employees). The sectoral classification has changed in 2001 but this has little impact in our estimates because we use repeated cross-sections.[8]

Our estimations also include a dummy variable for each of the administrative counties of Hungary and for the capital, Budapest. These spatial variables control for any county-specific variation, for example regarding wages and prices. The county dummy variables will also control for region-specific differences in labour markets, which are potentially important since unemployment rates tend to be lower in Budapest. These spatial (county) dummy variables also control for the potential measurement problem that a year of schooling may result in different

[8] Before 2001 it covered the following sectors: Agriculture; Industry; Construction; Transport and communications; Trade; Services; Health and social services; and Public services. After 2001 the sectoral classification became as follows: Agriculture, forestry and fishing; Mining and quarrying; Manufacturing; Electricity, gas, water supply and waste management; Construction; Wholesale and retail trade; Accommodation and food service activities; Transport, storage and communications; Financial and insurance activities; Real estate, renting and professional, scientific, technical and administrative activities; Education; Human health and social work activities; Art, entertainment, recreation and other community, social and personal services.

levels of human capital accumulation over different regions if there are differences in schooling quality across regions.

The county, firm size and industry fixed effects substantially reduce the potential for omitted-variable bias. Having data that were collected using the same survey instrument shores up the credibility of measured changes. These are important advantages to using the Wage and Earnings Survey data.

The main disadvantage of using this data source is that the choice of variables is small. Consequently, the ability to address violations of OLS assumptions is limited. If education is correlated with the residual, which can occur for instance if people select into (or out of) the sample based on some characteristic correlated with education, then the OLS estimator is biased. This source of bias is typically corrected by modeling the selection decision, which requires data on the individuals who have opted out of the wage market. Yet we cannot use this approach because the survey provides information only on wage earners.

In addition to examining the effects of labour market reforms on rates of return to education and experience, we also study gender differences. The canonical approach to deal with this issue is by Oaxaca (1973). Using the separate regression estimates for male and female wage functions, it decomposes the observed gender wage gap into two components, namely that from differences in education and experience levels (and any other explanatory variable) of men and women and that which cannot be explained from the model. The latter is often interpreted as resulting from labour market "discrimination."

The Oaxaca decompositions assume the OLS regression line runs through the mean and the difference in the mean of log wages between men and women can be written as:

$$\overline{\ln(w_m)} - \overline{\ln(w_f)} = (\bar{X}_m - \bar{X}_f)\beta^* + [(\hat{\beta}_m - \beta^*)\bar{X}_m + (\beta^* - \hat{\beta}_f)\bar{X}_f] \qquad (2)$$

where β^* is the hypothetical wage structure that would exist in the absence of discrimination. The first term on the right-hand side of equation (2) represents the portion of the wage difference that is explained by differences in endowments across men and women. The second term on the right-hand side represents the portion of the wage difference that is due to the different wage structures for men and women. This is the part of the wage differential that cannot be explained by the model and is potentially due to discrimination.

Notice that if there is any omitted variable that say has a positive effect on wages, and if men are more highly endowed with this characteristic, then the results from the decomposition would overestimate discrimination. Alternatively, if some of the factors that are in the model are themselves affected by discrimination, then the analysis could well underestimate discrimination. For example, if women are more likely to be fired in economic downturns, or if they have less access to the types of schooling deemed more valuable by the market, then the decomposition may underestimate discrimination.

4. Structural Reforms and the Labour Market

The objective of this section is to investigate the development of the labour market in Hungary using a unique data set covering the period from 1986 to 2016. As noted, three major structural labour market reforms were implemented in Hungary around the years 1992, 2002 and 2012. The first two intended to increase, and the last one to decrease, employment protection. In this section we would like to see whether these three key changes have discernible and identifiable effects in terms of returns to education, experience, industry, and gender.

Table 1 provides fixed-effects estimates of equation 1 for all firms with more than 50 employees from 1986 to 2016. The results show that the returns to a year of schooling almost

doubled from 1986 (6.4%) to 2016 (12.3%). Notice that the rate of return to education peaks at almost 14% in the year 2004 which is of course the year in which Hungary officially joined the European Union. The estimate hovers around 13% until 2013 and decreases to about 12% in 2016. This very fast rise in returns to education until 2004 reinforces the notion that central planners undervalued education and that the market can correct this undervaluation. The acceleration until 2004 and its subsequent leveling off afterwards illustrates the power of the prospect of EU membership as an external anchor.

{Table 1 about here}

While most Eastern European have education levels like Western European countries, average wages continue to be lower. Estimated returns to schooling are measured as percentage changes in wages. If markets are fully liberalized, rates of return will be higher than in Western Europe until there is convergence in wage levels.

Table 1 also provides evidence of decreasing returns to experience which peak in 1992 and decline until about 2002. This result appears to support the notion that labour market experience acquired under communism loses value after the introduction of major economic reforms although these results do not clarify whether trade liberalization or privatization instead play major roles at this point in time (Campos and Jolliffe 2007).

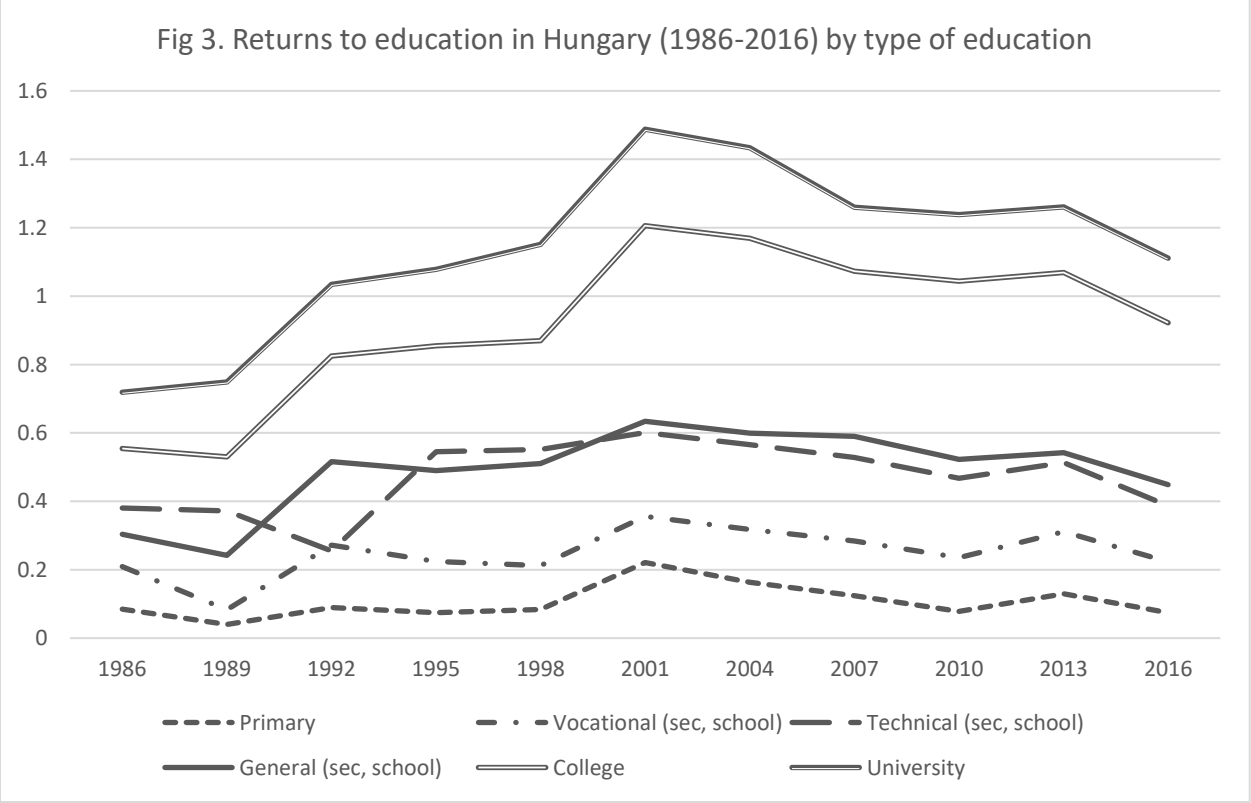
Table 1 also shows results in terms of gender and firm size. As for gender, it suggests that the uncorrected or raw wage difference in favor of males was larger during communism than after its collapse. Wages in larger firms seem to have been substantially lower in the years before 2000 perhaps reflecting privatization and the rapid decline of the state sector.

While returns to a year of schooling generally rose over 1986-2016, the wage premium to primary, and to a lesser extent vocational and technical schooling, actually declined (Table 2).

Wage earners who completed secondary general education but especially college or university, experienced the largest percentage changes in the wage premium. This finding supports the view that more generalist education may enhance an individual's ability to adapt to a rapidly changing environment.

{Table 2 about here}

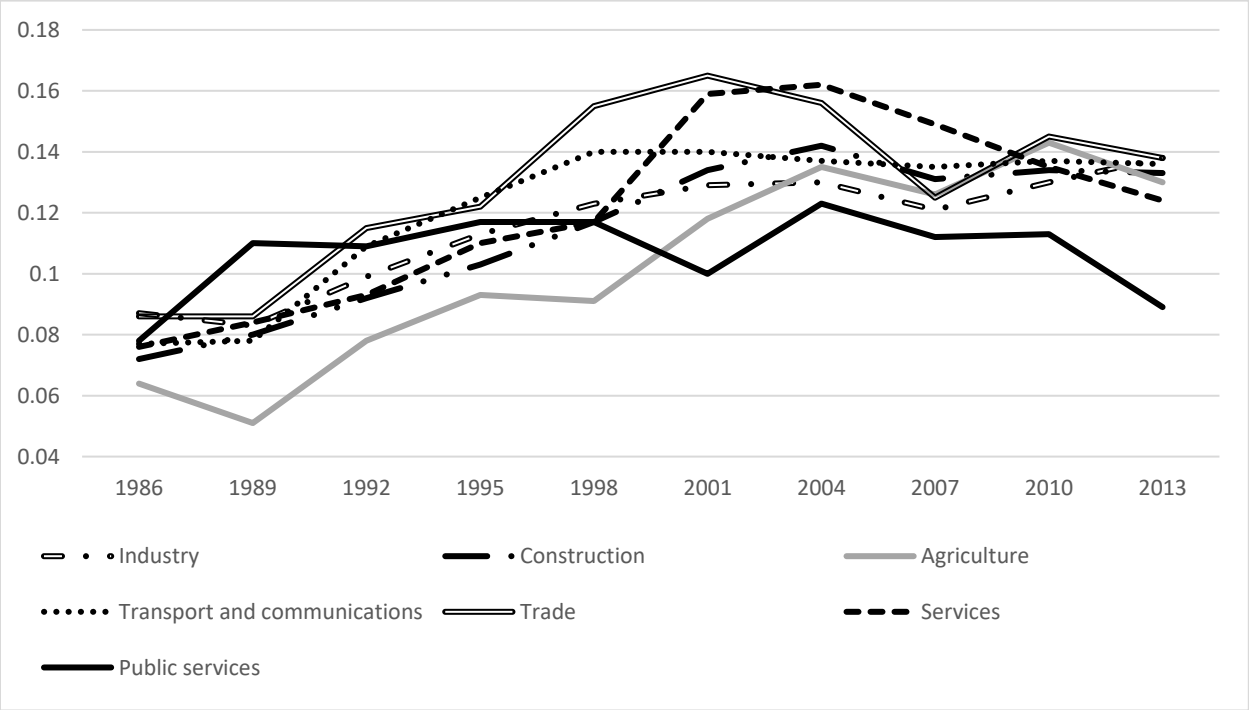
The returns to college and university education shown in Figure 3 reveal various inflection points, two of which interestingly overlap with the first two major reforms we identified. The 1992 reform coincides with an inflection point in the growth of the returns to college and university education, while these returns seems to peak at the time of the 2002 reform. As stressed in the discussion in section 2 above, there other various factors at play here that make it rather link to link these developments to the two individual reforms.



Source: Author's estimates from Table 2.

It is important also to look at whether different sectors behave differently in this context. As noted above, the industrial classification in the data set has changed in 2001 so these changes have to be examined with caution especially because it seems that the patterns are quite different before and after 2001. It is thus quite difficult to tell whether this is driven by changes in the coding of industries or by the labour market structural reforms implemented in 2002. Figure 4 plots our estimates of the returns to one year of education in eight different industrial sectors between 1986 and 2016 using the "old" classification. Until 2001, the largest returns to schooling are found in the services, trade and transportation industries. This is consistent with the notion that the planned economy undervalued skilled labour used in the production of nonphysical goods and services. After 2001, there seems to be a convergence of returns across industrial sectors with the exception of public services, which exhibits substantially lower returns to schooling than any of the other seven sectors after 2001.

Fig. 4 Returns to education in Hungary (1986-2013) by industrial sector



Source: Author's calculations using equation 1 and pre-2001 industry classification.

Now we turn to a discussion of the gender aspects. We first discuss our results from estimating male and female wage regressions and then we study the Oaxaca decomposition results. There is a huge amount of recent research on the gender wage gap (Altonji and Blank 1999, Blau and Lawrence 2017) with the objective of trying to understand its underlying causes but at the same time with a shift in emphasis away from the study of large cross-sections towards an emphasis on how the gap changes over time. Here we investigate male-female differences in the labour market in Hungary from 1986 to 2016.

Panel A of Table 3 presents the industry and county fixed-effects estimates of equation (2) for males, and Panel B lists these estimates for female wage earners. While the estimates for the male and female wage equations differ, there seem to be no clear patterns in their difference over time and few stark differences in a given year.

{Table 3 about here}

Table 4 provides an Oaxaca decomposition of the log wage gap for the years from 1986 to 2016 using the pooled-sample, OLS estimate as the non-discriminatory wage structure. As before, these estimates control for firm size, industry and county thus minimising as much as possible concerns about omitted variables biases. The first column shows that the male-female difference in log wages has declined substantially from 0.31 in 1986 to 0.11 in 2016, and the second column provides standard errors which indicate that the difference is highly significant.

{Table 4 about here}

The column labelled 'Part of the Gap Explained by the Model, Total' provides an estimate of the first term on the right-hand side of equation (2). The estimates from Table 4 indicate that in 1986, the male-female log wage difference would have been only 0.03 if males and females were paid according to the same wage structure. In other words, about 10% of the actual log

wage difference of 0.31 can be explained by the econometric model. This estimate fluctuates over the 30-year period but show that by 2016 the male-female log wage difference would have been -0.03 if males and females were paid on the same wage structure. The estimates in the columns labelled 'Education' and 'Experience' measure what portion of the log wage gap is explained by the male-female differences in these human capital characteristics. They show that for both 1998 and 2016, if men and women were paid according to the same wage structure, the market would value more highly experience and education held by women.

The penultimate column in Tables 4 lists how much of the difference in male-female log wages cannot be explained by the econometric model. The estimate of the male-female difference in log wages that cannot be explained by the model is typically described as resulting from discrimination. It is the difference between the actual log wage gap and that part of the gap which is explained by the model. In 1986 the unexplained component of the log wage differential was 0.27, or 68 percent of the difference. By 2004 the unexplained component dropped by almost half to 0.13 but capturing the bulk of the wage difference. Another way to consider this is to note that from 1986 to 2004 the male-female difference in log wages declined by an amount of 0.18 and this decline is almost fully matched by the drop in that part of the unexplained portion of the log wage differential. What we call the 2002 reform overlaps with EU accession in 2004. Both the wage gap and discrimination decrease rapidly until 2004. The leveling off after 2004 illustrates the power of the prospect of EU membership as an external anchor. Reforms have not only allowed markets to function more freely but have also encapsulated the role of the EU as an external anchor. The prospect of joining the EU may have motivated the government to ensure (through the passing of anti-discrimination legislation) that remuneration practices of the public sector were as non-discriminatory as possible. However, after 2004 other forces come into play.

One can hypothesize that the EU anchor is the main driver responsible for decreasing the gap until 2004 and from that point in time onwards, Beckerian competition driven by greater trade openness and FDI or by complementary improvements in product market regulations become the main force at play instead of the EU anchor. Future research should focus on this hypothesis.

In addition to examining the Oaxaca decomposition over the full sample we also carry out this analysis by firm ownership, i.e. for public and private firms.[9] Becker's theory of discrimination argues that the market punishes discrimination in private enterprises, but no similar force exists for public firms. The results show that while the wage gap in public diminished quicker than in private firms, the discrimination component has remained more or less stable in both types of firms.

5. Conclusions

This paper offers case study econometric evidence that tries to throw light on structural labour market reforms in Hungary which is a country that has received relatively little attention so far. Using the narrative approach, our analysis identifies three significant labour market reforms in Hungary: in 1992 and 2002 aiming at increasing, and in 2012 at decreasing, employment protection. We then study the effects of these reforms using a unique, representative and carefully recoded data set that starts in 1986 and extends, in three-year intervals, until 2016 thus covering the fall communism in 1989, the accession to the European Union in 2004 and the Global Financial Crisis. We find that over these 30 years the skill premium almost doubled, the

[9] Public firms include state-owned enterprises, public services as well as public administration. Many firms are not clearly classified as public or private by the National Employment Office and are excluded from the analysis (for instance, the data includes wage earners in charities and non-governmental organisations.) Finally, because central planning was still in force in 1986 and 1989, there are no firms classified as private for these years, and this is why this information is only available from 1992 onwards.

gender wage gap decreased to a third, and gender discrimination practically halved.

The empirical evidence discussed above supports the view that reforms have led the economy to better respond to market forces in providing large returns for human capital investments. The evidence also suggests that wage earners are responding to the changes in the market. The results above also show a large and statistically significant decline in the male-female difference in log wages over time as well as a large and statistically significant decline in the amount of the log wage difference that cannot be explained by the econometric model, i.e. "discrimination." We conclude that highly educated and female workers seem to have been the main beneficiaries from the labour market reforms in Hungary from 1986 at least until 2010.

There are various lessons and suggestions for future research. One is about the value of case study evidence. We think this is an important approach because it allows us to simultaneously address three key research questions about structural reforms. Namely, what are the economic and political conditions that help the implementation of reforms? What are their main impacts? And how do their sequencing and reversals affect their impacts? Traditional econometric studies tend to focus on one or two of these. A case study also allows us to go deeper in identifying and measuring structural reforms as well as in tracking key development in the labour market. Yet we must recognize a drawback from this greater granularity: it makes the link between reforms and their outcomes more nuanced and difficult to establish. One important direction for further research is to try to tighten these links in a case study context.

The structural reforms literature usually focuses on macro outcomes such as employment, growth and inequality (Campos and Nugent 2018). Above we focus instead on more micro or labour market outcomes such as returns to education, experience, sector and gender. Another suggestion for future research is to try to strengthen these links. One way to do so would be to go

deeper into education and discrimination inequalities by using other methods, such as quantiles regressions and the range of other decomposition approaches (Blau and Kahn 2017). Spatial econometric methods may also prove useful in further exploring the dynamics of the gender wage gap in terms of different industrial sectors, ownership (public, private and foreign) and across age cohorts. For the case of Hungary, this will require additional data work, both in terms of bringing in a range of other available data sources (such as the Labour Force Survey that has been running since 1992) as well as digging deeper into the Wage Survey to further improve the match of the industrial classification over time, the definition of weights and the firm ownership classification.

References

Adams, Zoe, Bishop, Louise and Simon Deakin (2016), "CBR Labour Regulation Index: Dataset of 117 Countries," Cambridge: Centre for Business Research.

Altonji, Joseph and Rebecca Blank (1999), "Race and Gender in the Labor Market." In Orley Ashenfelter and David Card (eds) *Handbook of Labor Economics: Volume 3C*, Amsterdam: Elsevier, North-Holland, 3143–3259.

Benczes, István (2016), "From Goulash Communism to Goulash Populism: The Unwanted Legacy of Hungarian Reform Socialism," *Post-Communist Economies* 28 (2): 146-166.

Blau, Francine and Lawrence Kahn (2017), "The Gender Wage Gap: Extent, Trends, and Explanations." *Journal of Economic Literature*, 55(3), 789-865.

Boeri, Tito, and Gyula Pulay (1998), "Labor Market Policy Reforms and the Fiscal Constraint," in Lajos Bokros and Jean-Jacques Dethier (eds) *Public Finance Reform during the Transition: The Experience of Hungary*, Washington, D.C.: World Bank, 317-336.

Boeri, Tito, and Katherine Terrell (2002), "Institutional Determinants of Labor Reallocation in Transition." *Journal of Economic Perspectives* 16(1): 51–76.

Brown, David, John Earle, and Almos Telegdy (2016), "Where Does Privatization Work? Understanding the Heterogeneity in Estimated Firm Performance Effects," *Journal of Corporate Finance* 41 (2): 329-362.

Campos, Nauro and Dana Zlabkova (2001), "The Wrong Mix: A First Look at Occupational Mobility during the Hungarian Transition." CERGE-EI Prague, DP 59.

Campos, Nauro and Dean Jolliffe (2007), "Earnings, Schooling and Economic Reform: Evidence from Hungary (1986-2004)," *World Bank Economic Review*, 21(3): 509-526.

Campos, Nauro and Roman Horváth (2012), "Reform Redux: Measurement, Determinants and Growth Implications," *European Journal of Political Economy* 28 (2): 227-237.

Campos, Nauro and Jeffrey Nugent (2018), "The Regulation of Labour in Developed and Developing Countries since 1960" in N. Campos, P. De Grauwe and Y. Ji (eds.), *The Political Economy of Structural Reforms in Europe*, Oxford University Press, 2018, pp. 75-88.

Ciminelli, Gabriele, Romain Duval and Davide Furceri (2018), "Employment Protection Deregulation and Labor Shares in Advanced Economies," IMF WP 18/186.

Commander, Simon, Janos Kollo, Cecilia Ugaz and Balacs Vilagi (1995), "Unemployment, Restructuring, and the Labor Market in Eastern Europe and Russia: Hungary," in Commander, Simon and Coricelli, Fabrizio, eds. *Unemployment, restructuring, and the labor market in Eastern Europe and Russia*. Washington, D.C.: World Bank, 1-38.

Duval, Romain, Davide Furceri, Bingjie Hu, Joao Jalles, and Huy Nguyen (2018), "A Narrative Database of Major Labor and Product Market Reforms in Advanced Economies," IMF WP/18/19.

Jarvis, Sarah and Pudney, Stephen, "Redistributive Policy in a Transition Economy: The Case of Hungary," CEPR DP 1117, January 1995.

Halpern, Laszlo and Charles Wyplosz (1998), "The Hidden Hungarian Miracle," in Laszlo and Charles Wyplosz (eds), *Hungary: Towards a Market Economy*, Cambridge University Press.

Kaminski, Bartlomiej (2000), "Industrial Restructuring as Revealed in Hungary's Pattern of Integration into European Union Markets," *Europe-Asia Studies*, 52(3), 457-487.

Kattuman, Paul, and Gerry Redmond (2001), "Income Inequality in Early Transition: The Case of Hungary 1987–1996," *Journal of Comparative Economics* 29 (1): 40-65.

Kertesi, Gabor, and Janos Köllo (2003), "Fighting "Low Equilibria" by Doubling the Minimum Wage? Hungary's Experiment," IZA DP 970.

Koltay, Janos (2002), "Wage Setting: Institutions and Practices," in Fazekas, K. and Koltay, J. (eds), *The Hungarian Labour Market*, Institute of Economics, Budapest, pp. 54– 62.

Kornai, Janos (1986), "The Hungarian Reform Process: Visions, Hopes, and Reality," *Journal of Economic Literature*, pp 1687-1737.

Kornai, Janos (1994), "Transformational Recession: The Main Causes," *Journal of Comparative Economics*, 19 (1), 39-63.

Mudde, Cas (2017), "Eastern Europe's Populists, Racists, and Extremists," *The Routledge Handbook of East European Politics*, Routledge, pp. 254-263.

O'Leary, Christopher (1997), "A Net Impact Analysis of Active Labour Programmes in Hungary," *Economics of Transition*; 5(2) 453-84.

Székely, István and Melanie Ward-Warmedinger (2018), "Reform Reversals: Areas, Circumstances and Motivations," *Comparative Economic Studies*, 60(4), 559-582.

Valentinyi, A (2012), "The Hungarian Crisis," *EEAG Report on the European Economy*, 115–130.

Vodopivec, M., Worgotter, A. and D. Raju, "Unemployment Benefits Systems in Central and Eastern Europe: A Review of the 1990s," *Comparative Economic System*, 47 (4), 615-651, 2005.

Vonyó, T. (2010), "Socialist Industrialisation or Post-war Reconstruction? Understanding Hungarian Economic Growth, 1949-1967,"*Journal of European Economic History* 39(2):253-300.

Žídek, Libor. "Evaluation of Economic Transformation in Hungary." *Review of Economic Perspectives* 14, no. 1 (2014): 55-88.

Table 1
Returns to Years of Schooling, 1986 – 2016:
Fixed-effects Estimation of Equation (1)

	1986	1989	1992	1995	1998	2001	2004	2007	2010	2013	2016
Potential years of schooling	0.064	0.078	0.096	0.112	0.117	0.132	0.138	0.130	0.134	0.135	0.123
	(0.0004)	(0.0004)	(0.0007)	(0.0007)	(0.0007)	(0.0010)	(0.0009)	(0.0009)	(0.0009)	(0.0008)	(0.0007)
Sex (Male)	0.281	0.279	0.154	0.141	0.136	0.179	0.199	0.200	0.207	0.182	0.191
	(0.0022)	(0.0022)	(0.0042)	(0.0036)	(0.0038)	(0.0037)	(0.0037)	(0.0037)	(0.0037)	(0.0033)	(0.0032)
Potential experience	0.028	0.026	0.029	0.025	0.025	0.018	0.020	0.020	0.024	0.025	0.024
	(0.0003)	(0.0003)	(0.0007)	(0.0006)	(0.0007)	(0.0007)	(0.0007)	(0.0007)	(0.0007)	(0.0006)	(0.0005)
Potential experience squared	-0.040	-0.037	-0.036	-0.028	-0.030	-0.026	-0.033	-0.036	-0.042	-0.042	-0.043
	(0.0007)	(0.0007)	(0.0015)	(0.0013)	(0.0015)	(0.0016)	(0.0014)	(0.0014)	(0.0014)	(0.0012)	(0.0011)
Firm size: ≥ 300 employees	0.007	0.001	-0.014	-0.138	-0.162	0.159	0.136	0.138	0.140	0.120	0.129
	(0.0055)	(0.0019)	(0.0054)	(0.0034)	(0.0034)	(0.0043)	(0.0041)	(0.0040)	(0.0041)	(0.0036)	(0.0035)
Number of observations	145,886	383,720	48,261	371,882	334,207	74,763	78,902	82,266	77,089	84,451	91,953
R-squared	0.449	0.408	0.427	0.402	0.402	0.429	0.455	0.449	0.469	0.489	0.479

Notes: Dependent variable is the log of monthly wages using Wage and Earnings Survey (WES) of the National Labor Center in Hungary. The sample consists of all firms with 50 or more employees. Numbers in parentheses are standard errors robust to heteroscedasticity of unknown form. The county, firm size and industry dummies are jointly significant. They are suppressed from the table for the sake of brevity. Industry classification differs after 2011. All listed point estimates are significant at $p < 0.001$.

Table 2
Wage Premiums by School Type, 1986 – 2016
Fixed-effects Estimation of Equation (1)

	1986	1989	1992	1995	1998	2001	2004	2007	2010	2013	2016
Primary	0.085	-0.040	0.089	0.074	0.084	0.221	0.163	0.124	0.078	0.130	0.074
	(0.0049)	(0.0059)	(0.0104)	(0.0130)	(0.0203)	(0.0240)	(0.0180)	(0.0228)	(0.0239)	(0.0341)	(0.0466)
Vocational (sec. school)	0.209	0.083	0.272	0.224	0.212	0.356	0.318	0.284	0.235	0.311	0.223
	(0.0053)	(0.0064)	(0.0146)	(0.0132)	(0.0206)	(0.0240)	(0.0180)	(0.0228)	(0.0238)	(0.0340)	(0.0466)
Technical (sec. school)	0.380	0.372	0.255	0.545	0.552	0.601	0.566	0.528	0.467	0.513	0.387
	(0.0054)	(0.0063)	(0.0111)	(0.0137)	(0.0208)	(0.0243)	(0.0183)	(0.0231)	(0.0240)	(0.0341)	(0.0466)
General (sec. school)	0.304	0.242	0.516	0.490	0.510	0.634	0.599	0.590	0.523	0.542	0.449
	(0.0059)	(0.0065)	(0.0108)	(0.0140)	(0.0210)	(0.0243)	(0.0184)	(0.0232)	(0.0241)	(0.0342)	(0.0467)
College	0.554	0.530	0.825	0.855	0.870	1.206	1.169	1.073	1.044	1.069	0.922
	(0.0068)	(0.0064)	(0.0111)	(0.0139)	(0.0208)	(0.0257)	(0.0197)	(0.0239)	(0.0246)	(0.0343)	(0.0468)
University	0.719	0.749	1.034	1.078	1.151	1.488	1.434	1.260	1.238	1.261	1.111
	(0.0058)	(0.0067)	(0.0126)	(0.0151)	(0.0219)	(0.0263)	(0.0203)	(0.0243)	(0.0249)	(0.0345)	(0.0469)

Notes: Dependent variable is the log of monthly wages using Wage and Earnings Survey (WES) of the National Labor Center in Hungary. The sample consists of all firms with 50 or more employees. Numbers in parentheses are standard errors robust to heteroscedasticity of unknown form. The county, firm size and industry dummies are jointly significant. The other variables from Equation (1) are suppressed for the sake of brevity. Industry classification differs after 2011. All listed point estimates are significant at $p < 0.001$.

Table 3
Returns to school by sex, 1986 – 2016,
Fixed-effects estimates of wage Eq. (1)

	1986	1989	1992	1995	1998	2001	2004	2007	2010	2013	2016
Panel A: Males											
Primary	0.105	0.024	0.115	0.106	0.170	0.217	0.165	0.089	0.070	0.117	0.094
	(0.0023)	(0.0037)	(0.0091)	(0.0126)	(0.0192)	(0.0280)	(0.0214)	(0.0271)	(0.0305)	(0.0367)	(0.0294)
Vocational (sec. school)	0.191	0.097	0.235	0.219	0.309	0.354	0.314	0.252	0.227	0.301	0.258
	(0.0023)	(0.0038)	(0.0114)	(0.0126)	(0.0191)	(0.0279)	(0.0212)	(0.0270)	(0.0304)	(0.0365)	(0.0293)
Technical (sec. school)	0.315	0.429	0.260	0.481	0.589	0.561	0.509	0.441	0.400	0.442	0.388
	(0.0026)	(0.0048)	(0.0092)	(0.0131)	(0.0194)	(0.0283)	(0.0216)	(0.0273)	(0.0306)	(0.0367)	(0.0294)
General (sec. school)	0.238	0.205	0.472	0.438	0.529	0.635	0.562	0.522	0.499	0.492	0.470
	(0.0034)	(0.0046)	(0.0095)	(0.0143)	(0.0203)	(0.0284)	(0.0218)	(0.0275)	(0.0308)	(0.0368)	(0.0296)
College	0.517	0.425	0.821	0.848	1.038	1.115	1.066	0.932	0.946	0.971	0.901
	(0.0034)	(0.0051)	(0.0109)	(0.0142)	(0.0202)	(0.0296)	(0.0229)	(0.0280)	(0.0311)	(0.0370)	(0.0299)
University	0.691	0.735	1.019	1.067	1.291	1.410	1.326	1.113	1.088	1.155	1.099
	(0.0034)	(0.0055)	(0.0111)	(0.0143)	(0.0204)	(0.0301)	(0.0234)	(0.0284)	(0.0316)	(0.0374)	(0.0301)
Potential experience	0.034	0.021	0.031	0.029	0.027	0.019	0.022	0.022	0.027	0.023	0.022
	(0.0002)	(0.0003)	(0.0006)	(0.0006)	(0.0007)	(0.0007)	(0.0006)	(0.0006)	(0.0006)	(0.0006)	(0.0005)
Potential experience squared	-0.001	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Number of observations	429,535	387,278	67,440	161,106	148,966	76,033	95,848	91,433	84,924	86,431	92,485
R-squared	0.307	0.229	0.419	0.418	0.440	0.441	0.460	0.443	0.467	0.484	0.483

	1986	1989	1992	1995	1998	2001	2004	2007	2010	2013	2016
Panel B: Females											
Primary	0.081	-0.028	0.124	0.054	0.187	0.161	0.087	0.111	0.063	0.158	0.078
	(0.0024)	(0.0040)	(0.0080)	(0.0129)	(0.0171)	(0.0298)	(0.0180)	(0.0196)	(0.0263)	(0.0349)	(0.0431)
Vocational (sec. school)	0.208	0.048	0.340	0.206	0.323	0.258	0.186	0.230	0.179	0.278	0.176
	(0.0029)	(0.0045)	(0.0111)	(0.0133)	(0.0175)	(0.0300)	(0.0181)	(0.0197)	(0.0263)	(0.0349)	(0.0431)
Technical (sec. school)	0.359	0.274	0.288	0.507	0.662	0.522	0.459	0.476	0.439	0.491	0.358
	(0.0028)	(0.0045)	(0.0091)	(0.0133)	(0.0174)	(0.0301)	(0.0184)	(0.0199)	(0.0264)	(0.0350)	(0.0431)
General (sec. school)	0.291	0.188	0.516	0.460	0.630	0.541	0.465	0.514	0.466	0.521	0.394
	(0.0029)	(0.0046)	(0.0083)	(0.0133)	(0.0175)	(0.0302)	(0.0185)	(0.0201)	(0.0266)	(0.0351)	(0.0432)
College	0.585	0.388	0.827	0.834	0.977	1.073	0.982	0.970	0.927	0.957	0.818
	(0.0043)	(0.0050)	(0.0091)	(0.0136)	(0.0177)	(0.0326)	(0.0203)	(0.0214)	(0.0274)	(0.0354)	(0.0436)
University	0.788	0.713	1.053	1.095	1.276	1.323	1.224	1.167	1.158	1.174	1.027
	(0.0037)	(0.0057)	(0.0106)	(0.0143)	(0.0185)	(0.0340)	(0.0217)	(0.0227)	(0.0285)	(0.0361)	(0.0439)
Potential experience	0.025	0.021	0.027	0.026	0.024	0.018	0.018	0.016	0.020	0.020	0.019
	(0.0002)	(0.0003)	(0.0005)	(0.0005)	(0.0006)	(0.0008)	(0.0006)	(0.0006)	(0.0007)	(0.0006)	(0.0006)
Potential experience squared	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Number of observations	376,652	546,004	69,389	368,822	338,194	50,874	68,715	65,823	61,025	61,135	64,906
R-squared	0.346	0.284	0.453	0.443	0.441	0.439	0.468	0.482	0.487	0.482	0.488

Notes: Dependent variable is the log of monthly wages using Wage and Earnings Survey (WES) of the National Labor Center in Hungary. The sample consists of all firms with 50 or more employees. Numbers in parentheses are standard errors robust to heteroscedasticity of unknown form. The county, firm size and industry dummies are jointly significant. They are suppressed for the sake of brevity. Industry classification differs after 2011. All listed point estimates are significant at $p < 0.001$.

Table 4
Oaxaca decomposition of gender wage gap, 1986 – 2016
Based on Estimation of Equation (2)

	Log wage gap	Standard error wage gap	Part of gap explained by the model			Unexplained 'discrimination'	Standard error
			Total	Education	Experience		
1986	0.31	(0.001)	0.03	-0.001	0.000	0.27	(0.001)
1989	0.29	(0.001)	-0.01	0.000	0.001	0.27	(0.001)
1992	0.19	(0.003)	0.02	-0.001	-0.001	0.16	(0.002)
1995	0.18	(0.003)	0.01	0.001	-0.001	0.14	(0.002)
1998	0.17	(0.003)	0.01	-0.003	-0.001	0.12	(0.002)
2001	0.15	(0.004)	0.00	0.004	0.000	0.15	(0.003)
2004	0.13	(0.004)	-0.02	0.001	0.000	0.15	(0.003)
2007	0.13	(0.003)	-0.03	0.000	0.000	0.16	(0.003)
2010	0.11	(0.003)	-0.04	0.000	0.000	0.16	(0.003)
2013	0.10	(0.003)	-0.03	0.000	0.000	0.14	(0.003)
2016	0.11	(0.003)	-0.03	-0.001	0.000	0.15	(0.003)

Notes: Dependent variable is the log of monthly wages using Wage and Earnings Survey (WES) of the National Labor Center in Hungary. The sample consists of all firms with 50 or more employees.