Hungary's Price and Wage Level in International Comparison: Are They Really Disconnected?*

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It is often claimed that Hungary's price level has almost reached that of the more developed member countries of the European Union, while wages lag behind both the relative level of prices and the economic performance of the country. The article shows that these notions are based on misperceptions and misinterpretations, related to the selective comparison of prices and to methodological problems in wage-comparisons. If adequately compared, the level of Hungary's prices turns out to be somewhat lower than justified by per capita real gross domestic product, while the level of Hungary's labour costs, adjusted for differences in price levels, is in line with the country's labour productivity. Though the article focuses on Hungary, most of the issues discussed are relevant for the other Central and East-European member countries of the European Union, too.

KEYWORDS:
International comparison.
Levels of economic development.
Relative wage and price levels.

The relative level of prices and wages of a less developed country, as compared to more affluent nations, is an important and politically sensitive topic, often abused by populist politicians. This article, after providing some examples of political misuses, tries to explain why some common perceptions regarding "too high prices" – involving "too low wages" of citizens – of a less developed country may be flawed. The examples relate to Hungary, but most of the issues discussed are relevant for the other Central and East-European member countries of the EU[1] as well.

In the next section, some typical political slogans are cited, followed by the discussion of a sort of "spatial" money illusion. Next, the level of Hungarian prices is compared to the more developed part of the EU, relying on the cross-country relationship between economic development, price levels and the relative price between services and goods. The final section deals with the comparison of nominal and real wages (the former is measured in euros, the latter at PPP[2]). Seemingly, it makes a fundamental difference, whether wages measured at current exchange rates or at PPPs are compared to real productivity. However, as to be shown, the two approaches can be reconciled, and neither of them indicates that the Hungarian wage level lags behind the labour productivity of the country.

1. Wage and price levels: the political slogans

During the European Parliament election, several political parties placed slogans related to wages and prices on their posters, such as "European wages for European work!" or "We want European salaries, not just European prices!" Another, less combative slogan was "The work of a Hungarian employee in Kecskemét is worth just as much as the work of an employee at any other Mercedes plant. Let us close the EU-Hungarian wage gap!"

The first slogan is built on a statistical flaw, while the second derives from an economic misunderstanding and a statistical flaw. The problem with the third one is that the wage gap across Mercedes plants is irrelevant regarding the possibilities of convergence in the overall Hungarian wage level to the EU average.

It is to be shown in connection with the first slogan that "Hungarian work" is far from being "European" in the sense that its average productivity – measured by

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[1] EU: European Union.
[2] PPP: purchasing power parity.

GDP[3] per hour worked – was only 53 percent of the average of the Western European member countries in 2012–2013. (By "Western Europe" we refer to the EU15[4], the members of the EU before the enlargement of 2004.) Therefore, the demand that Hungarian wages be raised to the (West-) European level is unjustified. The theoretical problem with the second slogan is that price convergence has no direct relationship with comparative wage levels. If Hungarian productivity is approximately half of the Western European average, then euro wages cannot be much higher than half of the latter, even if the respective price levels were identical. This misunderstanding is compounded by a statistical flaw: domestic prices are still far below that of the EU15. In 2013, the price levels of GDP, total household consumption and household consumption expenditures stood at 54, 51 and 56 percent of the EU15 average, respectively. As for the third slogan, Mercedes chose Hungary as a production location because Hungarian prices, and – partly due to this – Hungarian wages are lower than in the home country of the firm. The average wage level in the Mercedes plant in Kecskemét, however, is very likely to be far above the national average, just as in many other foreign-owned companies.[5] If, from another standpoint, the wages in the Hungarian Mercedes plant were raised to the wage level in Germany, forcing all the other firms to follow suit, this would lead to severe layoffs, since the bulk of domestic firms, operating at a much lower level of productivity, would be unable to offset the higher cost of labour.

How such slogans, fraught with theoretical and statistical fallacies, can be disseminated in public? The most likely explanation is that the experts of the political parties and the originators of slogans themselves are influenced by the same illusions as the majority of their voters.

2. Price levels, relative prices and income levels in international comparison

In the following section, I will first try to demonstrate how a sort of money illusion may lead to flawed international comparisons. Second, I provide an overview of the theoretical and empirical links between price levels and relative prices on the one hand, and levels of economic development on the other.

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[3] GDP: gross domestic product.

[4] EU15: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden and the United Kingdom

[5] As shown by *Earle–Telegdy–Antal* [2012] for foreign-owned companies in general and by *Soós* [2013] for foreign-owned exporting companies in particular, the wage level at these companies is far above the national average. The wages in the Mercedes plant are unlikely to be exceptions of this general pattern.

2.1. Spatial money illusion

Whether the so-called money illusion has a macroeconomic relevance via its influence on personal decisions is a disputed issue. Money illusion is the failure to perceive nominal magnitudes (measured at current prices) as clearly distinct from "real" ones (adjusted for price level changes).[6] A frequently cited example of money illusion is the observation that employees tend to be more willing to accept a decrease in their real wages because of a rise in inflation than due to a cut in nominal wages. Several explanations of money illusion exist: one of them is that people generally perceive changes in the prices of goods and services purchased daily more acutely than changes in the prices of less frequently purchased goods and services, involving larger expenditures. As an analogy of this intertemporal money illusion – the erroneous perception or ignorance of price changes – "spatial money illusion" can be understood as a tendency to misperceive or ignore the existing price level differences between countries.

Hungarian tourists visiting Western Europe may be led astray by this type of money illusion, relying solely on the price tags displayed in the shopping centres. Somewhat similar illusion characterises those Hungarian economists, who – while claiming that "we have reached European prices" – fail to notice, due to the careless or selective inspection of comparative price statistics, that an average earner from Hungary would suffer a deep fall in living standards, if having to live in Western Europe from the salary received at home. As it can be seen from the first row of Table 1, the average price level of household consumption expenditures in 2013 was nearly 80% higher in the developed EU member countries than in Hungary.[7] The impact of this price differential on the purchasing power of Hungarian consumers is represented by the second column of Table 1 that shows how many forints our one hundred forints earnings would have been worth if we had tried to live from it in Western Europe. In 2013 each 100 forint of our net salary was worth 56 forints in the EU15, implying a potential loss of purchasing power by 44%.

It can also be seen from Table 1 that price levels are far from uniform within the EU15.[8] In Denmark, for example, the purchasing power of our domestic income

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[6] The book of *Fischer* [1928] is widely regarded as the classic exposition of money illusion. Although modern macroeconomic theory, being based on the assumption of rational expectations, posits the impossibility of this phenomenon, *Akerlof–Shiller* [2009] demonstrated that its ignorance often makes the actual evolution of modern economies incomprehensible. Nevertheless, even if economic agents do fall prey to money illusion, economic analysts must not: for an adequate analysis, the clear distinction between nominal and real quantities is a vital requirement. For a further discussion of money illusion, see *Shafir–Diamond–Tversky* [1997].

[7] $1/0.562 = 1.78$ where the 56.2 percent is the Hungarian price level of household final consumption expenditures compared to the EU15 price level. See the first row of Table 2.

[8] Important reasons of the variation in price levels are the significantly differing average value-added tax rates and the difference in the value-added tax rates imposed on main expenditure items. This should be taken into account while interpreting the comparisons provided by Table 2.

would have fallen by almost 60 percent in 2013, while in the UK and in Germany, it would have declined by approximately 50 and 40 percent, respectively. It is not by accident that Hungarian retired citizens do not try to live off their pension in the Nordic countries but the opposite is quite common. (As the table shows, the latter countries have the highest price levels in the EU.) The Western European senior citizens coming to live in Hungary do not suffer from money illusion: they know that the purchasing power of their pension may even double if they spend it in Hungary, instead of their home country.

Table 1

The price levels of household consumption expenditures in the EU15,
compared to Hungary, 2013

Group of countries/ Country	Price level of household consumption expenditures (Hungary = 100%)	Purchasing power of 100 forints received in Hungary (HUF)
EU15	178	56
Belgium	183	55
Denmark	234	43
Germany	170	59
Ireland	198	50
Greece	150	67
Spain	159	63
France	183	55
Italy	173	58
Luxembourg	207	48
Netherlands	185	54
Austria	179	56
Portugal	144	69
Finland	207	48
Sweden	217	46
UK	190	53

Source: Here and in Table 2 as well as in Figures 1–3, own calculation based on Eurostat data.

2.2. Relative consumer price levels and relative prices

Table 2 shows the price level of selected commodity groups and basic services in Hungary and some developed EU member countries in percent of the EU15 average.

These comparisons may provide some clues regarding the fallacy that the Hungarian price level has already caught up to that of Western Europe. As shown in the table, the Hungarian price level of food, clothing and especially electronic equipment is quite close to that of the more developed part of Europe. As a result, a Hungarian visitor in Western Europe, who only compares the prices of these goods, is likely to fail to perceive that the overall price level is much lower in Hungary than in the countries compared.

However, when after asking friends or relatives who live and work in Western Europe about their monthly housing expenses (rent, energy, etc.), one may get a completely different picture, supported by the figures in Table 2. In Western Europe, the price of these services is double and half the level in Hungary; triple in the UK, 3.5 times higher in Denmark. (The share of housing costs within overall household expenditures is nearly one-fourth in Hungary; in Western Europe, it is somewhat higher.) A comparison of relative prices highlights a clear pattern: in Hungary, the prices of goods are much closer to Western European levels than the prices of services. In 2013, the price level of the former reached 72% of the EU15 average, while the respective ratio for consumer services was only 44%. The weighted average of the two gives 56% for the overall relative price level of household consumption expenditures, which is rather far from being "European".

Table 2

Price levels of household final consumption expenditures and their selected components
in Hungary and six Western European countries, 2013
(EU15 = 100%)

Consumption aggregates	Hungary	Austria	Denmark	UK	Finland	Ireland	Germany
Household final consumption expenditures total	56.2	100.7	131.6	106.9	116.3	111.3	95.6
Consumer goods	72.3	102.5	127.4	99.0	111.3	110.3	99.2
Food	74.3	115.3	127.8	93.0	115.3	108.7	101.8
Clothing and footwear	75.6	97.9	124.0	92.3	118.7	97.0	101.5
Audio-visual, photographic and information processing equipment	93.5	94.8	111.9	101.6	107.9	104.3	93.9
Consumer services	44.3	98.5	135.6	115.1	121.8	112.3	93.3
Housing, water, electricity, gas, other fuels	38.3	86.9	133.8	124.4	114.3	105.5	95.3

2.3. Relative price level and the relative level of economic development: theory and evidence

The relationship between price levels and economic development − that is, the observation that relative price levels (measured in a common currency) between countries tend to rise along with the relative level of economic development − was modelled by *Balassa* [1964] and *Samuelson* [1964]. The more developed a country is economically − that is, the higher its GDP per capita or GDP per hour worked is − the higher the price level of GDP will be, and vice versa: the less developed the country is economically, the lower its price level is.[9] Figure 1 shows the price level of GDP of 27 EU member countries as a function of GDP per capita, expressed in PPP, for 2013.[10]

Figure 1. The price level of GDP as a function of GDP per capita in the EU member countries, 2013
(EU15 = 100%)
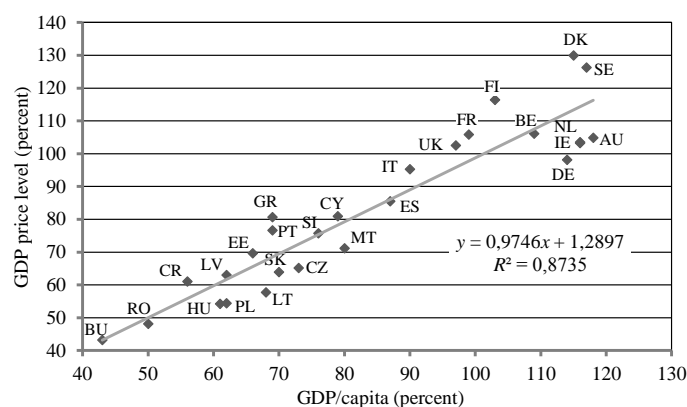
Note. The price level of GDP (P_GDP) is compared to the EU15 average. P_GDP = 100 × (*PPS[11]/E*) where *PPS* is the purchasing power parity construed by the Eurostat (in the figure: as a percentage of the EU15 average) and *E* is the currency exchange rate. For the EU15 as a whole, 1 *PPS* = 1 euro in the cart; for the Eurozone members, *E* = 1. See the country codes stipulated by EU rules at http://publications.europa.eu/code/en/en-5000600.htm

The data demonstrate a very close relationship between the levels of economic development and price levels. On average, a 1-percentage point higher/lower level of

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[9] To put it differently: the proposition of the purchasing power parity theory that the equilibrium level of the exchange rate is determined by the purchasing power parity is not valid if the currencies in question belong to countries at different levels of economic development. The currencies of less developed countries are undervalued relative to their purchasing power parity, and the extent of currency "undervaluation" in this sense is an increasing function of the relative underdevelopment of the country.

[10] Luxemburg is not included in the comparisons, since its small size is combined with extreme values.

[11] PPS: purchasing power standard.

per capita GDP roughly involved a 1-percentage point higher/lower relative price level.[12] The price level in Hungary – like in Poland – was below the regression line in 2013, that is, it was slightly lower than warranted by its relative development level. With the GDP per capita reaching 61% of that of the EU15, the price level, expressed in euro, should have been higher by approximately 6.5 percentage points (10 percent) to be in line with the relative development level. This suggests that the forint may have become undervalued by 2013.

Balassa [1964] explained the relationship shown in Figure 1 by the difference between the productivity of tradeable and non-tradeable sectors, but his model was based on a number of restrictive assumptions. His explanation, partly due to these assumptions, has turned out to be highly controversial, and many questioned even the existence of the relationship itself. In an attempt to make a clear distinction between the statistical observations and their possible explanations, *Samuelson* [1994] coined the statistically observed phenomenon as the "Penn effect". The name is a homage to the Penn World Table, the national accounts dataset covering most countries (originally linked to the University of Pennsylvania[13]) that was instrumental in identifying the close empirical relationship between differences in per capita incomes and price levels, for which the Balassa-Samuelson hypothesis is a possible, although not the only and not always valid explanation. The Penn effect in itself, however, to quote Samuelson, is a "brute statistical fact" even if the assumptions of the Balassa model turn out to be unrealistic, or if alternative explanations – for example, the one based on the differences in factor intensities of goods and services (*Bhagwati* [1984]) or on the different income elasticities of demand for goods and services (e.g. *Podkaminer* [2010]) – turn out to have more explanatory power.[14]

While Figure 1 shows that the Penn effect was operative among the EU member countries (significant price level differences came with considerable income differences), Figure 2 suggests that this can mostly be explained by the substantial variation in the price of services. Comparing the two sides of the figure shows that the variation in the price levels of goods (as a function of relative GDP/capita levels) is much less pronounced than that of services. Even if the prices of goods are far from being equalised internationally (as assumed by Balassa's model), the regression line expressing the association between service prices and income levels is much steeper than the one expressing the relation between the prices of goods and levels of income.

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[12] The relationship between the two variables remains close if alternative years – or a period of several years – is chosen as reference period instead of 2013. The value of the regression coefficient in Figure 1 – 0.975 – is statistically significant at the 0.01 level.

[13] As of 2013, the "next generation" of the Penn World Table is maintained by the *University of Groningen* [2013].

[14] According to *Samuelson* [1994]: "A reliable fact that is not provided with an explanation is better than a nice theory that helps explain and understand an *untrue fact*." (p. 205.).

Figure 2. The price level of goods (above) and services (below) as a function
of GDP per capita in EU member countries, 2013
(EU15 = 100%)
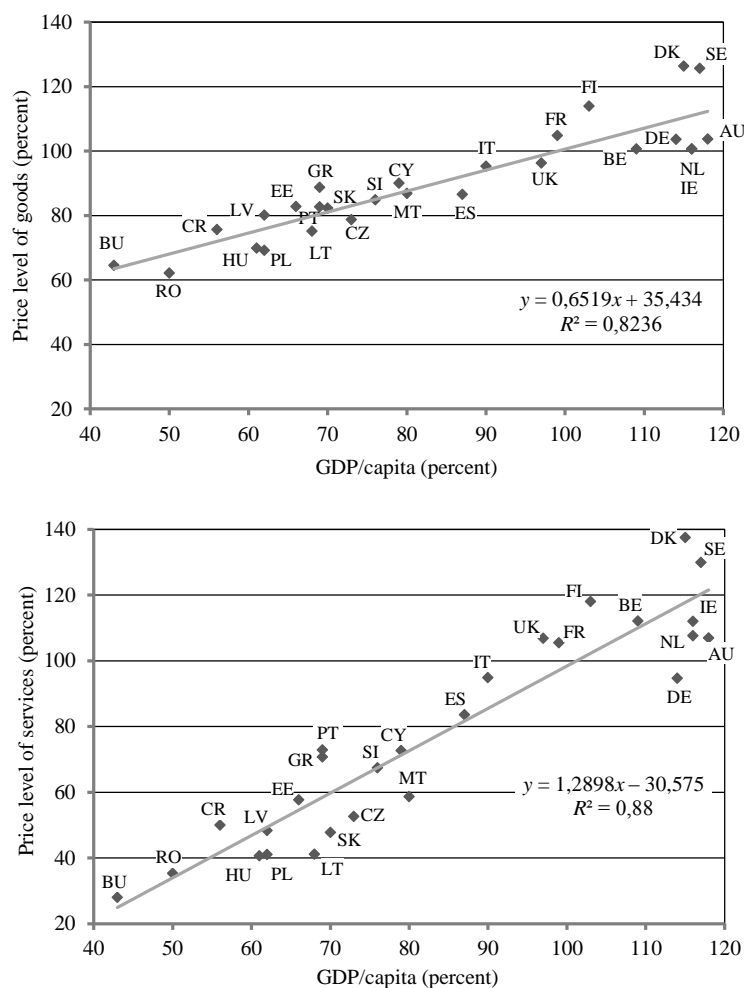
We have seen in Table 2 that in Hungary the price level of consumer services, as compared to the more developed EU countries, is lower than that of consumer goods. Figure 2 shows that this is not a Hungarian peculiarity; it closely corresponds to an EU-wide pattern. Namely, in countries with lower-than-average GDP per capita, the relative price level of services is lower than that of goods, and this applies not just to consumer goods and consumer services but also to goods and services in general. Figure 3 shows the "internal relative price" of services – that is, the price of services

relative to the price of goods − as a function of relative income levels.[15] It informs about the domestic background of the relationship between the price level and the per capita volume of GDP, demonstrating that the phenomenon shown by Figure 1 can chiefly be explained by the cross-country differences in the internal ratio of the price level of services to that of goods. It is important to note, however, that only the substantial differences can be explained that way, since, as presented by Figures 1 and 3, this EU-wide pattern is far less discernible within the groups of countries at a similar level of economic development.

Figure 3. The relative price of services and goods as a function
of GDP per capita in EU member countries, 2013
(EU15 = 100%)
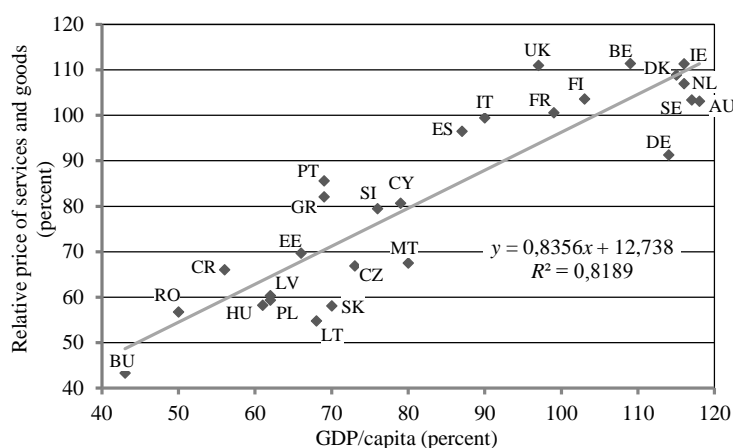
The relative price featured in Figure 3 is similar to the so-called "internal real exchange rate" (see, for example, *Égert–Halpern–MacDonald* [2006] and *Ruscher–Wolff* [2009]). This relative price has a definitive impact on the relative domestic demand and profitability (therefore, supply) of tradeables and non-tradeables (services dominate the latter), and as a result, the foreign trade balance as well. An above-equilibrium level of the relative price of services is seen as an indicator of overvalued currency, possibly leading to a foreign trade deficit, while the opposite is seen as a sign of under-

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[15] The internal relative prices displayed in Figure 3 show the ratio of the two external relative price levels, that is, the ratio of the respective price levels of goods and services relative to the EU15 level (the two sides of Figure 2). Construing such a ratio is not a methodologically perfect exercise, since a different set of purchasing power parities is required for the comparison of within-country price structures than the purchasing power parities used by the Eurostat for cross-country price level comparisons. Price structure comparisons based on the alternative, so-called Geary–Khamis-type purchasing power parities were last published in 2008 by the Organisation for Economic Co-operation and Development, and for most countries, the two methods of calculation did not produce substantially different internal price structure figures. For a discussion of the two types of purchasing power parities and their uses, see *Eurostat–OECD* [2012].

valued currency that can generate foreign trade surplus. If we define "equilibrium" as points lying on the cross-country regression line, and assume that divergences from the regression line in Figure 3 (i.e. the residuals of the regression) indicate the extent of misalignment, then the Hungarian forint was undervalued by about 8 percent in 2013. This estimate is in line with the 10 percent undervaluation indicated by Figure 1, but it is also corroborated by the fact that Hungary was pretty much an outlier among the EU member countries in 2013 with its external trade surplus up to 8% of GDP. All this suggests that the forint was somewhat undervalued in the year of our observation and it is not a minor detail regarding the question of whether the Hungarian wage level is unreasonably low relative to the EU15 wage level.

3. Nominal and real wage levels in international comparison

Concerning relative wage levels, we can often hear arguments like the following: „At present, Hungary's economic performance stands at around two-third of the EU average, yet our wage level is barely above one-third of the EU average. Therefore, it is just not true that our wages are so low because our economic performance is so poor." (*Molnár* [2014]).

This reasoning suffers from a methodological mistake, frequently made not just by politicians but also by economists: contrasting relative economic performance measured at PPP (that is, in real terms) with relative wage levels measured in euros (i.e. in nominal terms). Those, who make such comparisons, see through the "veil" of nominal magnitudes regarding economic performance (and compare volumes) but fall into the trap of "spatial money illusion" – to use the term proposed earlier – when dealing with relative wage levels, by comparing nominal magnitudes expressed in euros.

I proceed by first examining the international comparability of net wages and labour costs. After this, I outline two theses.

> *1.* If we wish to obtain direct and easy-to-interpret information regarding the relationship between economic performance and wage levels, that is, to make a judgment on whether the relative wage level in a given country is in line with its relative level of development, we can choose between two, equally applicable methods: we *a)* measure both economic performance and wages in real terms (PPP) or *b)* compare nominal quantities expressed at current exchange rates (in the case of European comparisons in euros).

2. It is not pointless to relate euro-denominated wage levels to real economic performances in a cross-country comparison. To do this in a meaningful way, it is essential to comprehend the nature of the economic relationship between the two. As we will see, none of these two approaches confirms the claim that Hungarian wages are "lagging behind".

3.1. From net wages to labour costs

Comparing wage levels internationally is a much less straightforward task than comparing price levels. Wages can be interpreted as costs (from the perspective of employers) and as income (for the employees). Comparing wages as costs and as incomes, however, can lead to different results. From the employers' perspective, gross compensation (labour cost) is the relevant indicator – this is what affects the profitability and cost-competitiveness of production. For employees, in turn, the level of net earnings is relevant: this determines income available for either consumption or savings. To make international comparisons regarding real wages defined in one way or the other, different cross-country price level indices (PPPs) are required. For comparing "producer real wages", price level indices for production (i.e. that of GDP) should be applied, while "consumer real wages" ought to be compared by using the price level index for household consumption expenditures.

However, if comparison of wages is a more complex task than that of prices, it is yet more challenging to compare net wages than labour costs in an international context. While the concept of average labour cost has a more or less straightforward meaning and can be connected to specific statistical data, net wages represent a different case. The empirical content of the latter depends on several factors, like the level of income and family size. It is no accident that the Eurostat publishes data for average labour costs[16] but not for average net wages. Instead, it provides data for net wages received by certain categories of wage earners, differentiated by income level and family size.[17] Moreover, these numbers reflect only the impact of taxes, tax breaks and social security contributions, but they do not take into account social transfers in kind received (public education, public health care).

These conceptual problems and measurement difficulties notwithstanding, I present a very simple and admittedly rough set of estimates for the comparative levels of net wages and gross labour costs in Hungary, in both euro and PPP terms in Table 3. The EU27 average levels in 2012 serve as the reference for comparison, but indi-

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[16] Eurostat database: Labour cost levels (lc_lci_lev). http://ec.europa.eu/eurostat/web/labour-market/labour-costs/database

[17] Eurostat database: Annual net earnings (earn_nt_net). http://ec.europa.eu/eurostat/web/labour-market/earnings/database

ces relative to the EU15 average and for the year 2013 are also featured if the statistics are available.[18] The first block of the table (rows 1–4.2) displays nominal (euro-denominated) ratios, the second block (rows 5–6) shows the price indices needed for the conversion of the nominal values to real magnitudes, while the relative real levels can be seen in the third block (rows 7–10.2).

The comparative level of real household consumption along with its two components – household consumption expenditures and social transfers in kind from government – are also shown in the table as memorandum items.

In the following, I focus on that column of the table, which shows Hungarian levels relative to the EU27 in 2012. The nominal (euro-denominated) GDP per capita, the GDP per hour worked and gross hourly labour costs, as a percentage of EU27 average, stood at 38.5, 34, and 32 percent, respectively. The relative level of productivity (GDP per hour worked) lagged behind the relative level of economic development (GDP per capita), while the former only slightly differed from the relative level of hourly labour costs. The level of net earnings of the various categories of earners were spread between 24.5 and 31.5 percent of the EU27 average; that is, even the relative net wages of the comparatively highest earners fell below the average relative level of labour costs. This suggests that the comparative level of Hungarian gross labour costs is roughly in line with labour productivity, but relative net wages are below this level.

The relative real (PPP-denominated) magnitudes are obtained by applying the cross-section price level indices shown in the second block of the table. These real (volume) figures indicate – in accordance with the nominal ones – that the producer real wages are only slightly lower than real productivity. By contrast, net real wages, while varying in wide range (between 41 and 53% of the EU27 average), fall behind, even at their highest, from the relative level of productivity. These figures, however, should be interpreted in light of information on per capita social transfers in kind, shown among the memorandum items in Table 3. The volume of this transfer stands at 80 percent of the EU27 average, far above per capita GDP or productivity. (See the 7th, 8th and 11.1[th] rows in the table). As a result, the real level of actual household consumption (11th row) is, by and large, in line with Hungary's economic performance: between the comparative level of the productivity and income (GDP/capita) of the country.[19]

Next, I examine the link between productivity and labour costs, based on the data on EU member countries, in order to clarify whether Hungarian labour costs should be seen as below par when compared with Hungary's economic performance.

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[18] The Eurostat does not provide hourly labour cost data regarding the EU15 average and Croatia; at the time of writing, data on the average labour cost in the EU27 in 2013 were also unavailable.

[19] A similar pattern can be seen in the other former socialist EU member countries as well: the range of net wages is at a relatively low level, while the level of social transfers in kind is remarkably high as compared to that of economic performance and productivity.

Table 3

Selected indicators of economic performance and wage levels in Hungary,
as a percentage of the average levels in the EU15 and EU27, 2013

(percent)

Indicator	2012	2013	2012	2013
	EU15 = 100		EU27 = 100	
	Nominal levels (euro)			
1. GDP per capita	33.0	33.0	38.5	38.5
2. GDP per hour worked	28.5	28.5	34.0	34.0
3. Real labour cost	–	–	32.0	31.0
4. Net real wage				
4.1. Lowest*	21.0	–	24.5	–
4.2. Highest*	27.0	–	31.5	–
	Price level indices (PPS/E)**			
5. GDP	54.1	54.2	57.4	57.5
6. Household consumption expenditures	56.8	56.2	60.2	59.6
	Real levels (PPP)			
7. GDP per capita (7. = 1./(5./100))	61.0	61.0	67.0	67.0
8. GDP per hour worked (8. = 2./(5./100)	53.0	53.0	59.5	59.5
9. Real labour cost (9. = 3./(5./100))	–	–	56.0	54.0
10. Net real wage				
10.1. Lowest* (10.1.= 4.1./(6./100)	35.0	–	41.0	–
10. 2. Highest* (10.2.= 4.2./(6./100)	44.5	–	53.0	–
	Memorandum items (real consumption per capita, in purchaser power parity)			
11. Actual consumption of households	58.0	58.0	63.0	63.0
Of which:				
11.1. Consumption expenditures	54.0	54.0	59.0	59.0
11.2. Social transfers in kind	75.0	75.0	80.0	80.0

* The minimum and maximum levels out of the thirteen categories (by income and family size) featured in the Eurostat database.

** The Eurostat provides figures to one decimal only for price level indices; I have rounded the other figures to half decimal places.

Source: Here and hereinafter, own calculation based on Eurostat and AMECO databases.

3.2. Nominal and real labour costs

To start with, it might be useful to summarise the reasons why it makes more sense to compare productivity levels with gross labour costs rather than with net earnings. This is important since the slogans quoted earlier in the article may refer to labour costs and net wages alike. However, it is extremely difficult to make quantitative statements regarding the latter for the following reasons.

– There are no internationally comparable data on the subject of national averages for net wages (the Eurostat does not provide weights for the 13 income/family subgroups).

– Net wage numbers do not mean much in themselves (without taking into account the real value of social transfers in kind), but the per capita volume of the social transfers in kind cannot be linked in any meaningful way to the available net wage data.

– While the concept of GDP per hour worked is directly comparable to that of hourly labour costs, it would be highly problematic to compare annual net wages per income earner (for which the data do not actually exist) to GDP per hour worked.

Let us have a look on the indicator that has the properties for proper international comparison. According to Eurostat data, Hungarian gross labour costs per hour worked stood at 7.5 and 7.4 euros in 2012 and 2013, respectively, which corresponded to 31-32% of the EU27 average. Is this ratio high or low, or is it just about right in light of the 60% relative productivity level of the country (or 53%, if compared to the EU15)? As emphasised previously, the simple nominal (euro) 30% and real (PPP) 60% comparison is unsuitable to arrive at meaningful conclusions. However, no one can predict whether the nominal or real comparison of the two ratios will be more fruitful. This is why, as a first step, it is useful to have a look at the cross-section productivity/labour cost relationship among the 26 member countries in both euro- and PPP-terms. [20]

The nominal comparison, shown in the upper part of Figure 4, suggests a strikingly strong relationship between euro labour costs and productivity levels expressed in euros: the rise in current price productivity by one percentage point involves a rise in labour costs by 0.3 euro.[21] The data point of Hungary lies on the regression line, that is, the euro labour cost in Hungary is in line with the EU-wide cross-country

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[20] Croatia is left out from the following figures, as the AMECO database does not contain productivity data on the country.

[21] In terms of relative levels (the correlation of logarithms), with a rise of 1 percent in euro productivity comes the rise of 1.1 percent in euro-denominated labour costs.

productivity/labour cost relationship. The lower part of the figure displays the national productivity/national labour cost connection in real terms, i.e. adjusted for the differences in price levels. Again, the relationship is quite strong, and the producer real wage in Hungary is in line with its comparative productivity level. This does not apply for some of the other new member countries (Latvia, Lithuania, and Slovakia) whose data points lie well below the regression line.

Figure 4. Labour costs and productivity measured in euro (above) and purchasing power parity (below)
in 26 EU member countries, 2013
(EU15 average = 100%)
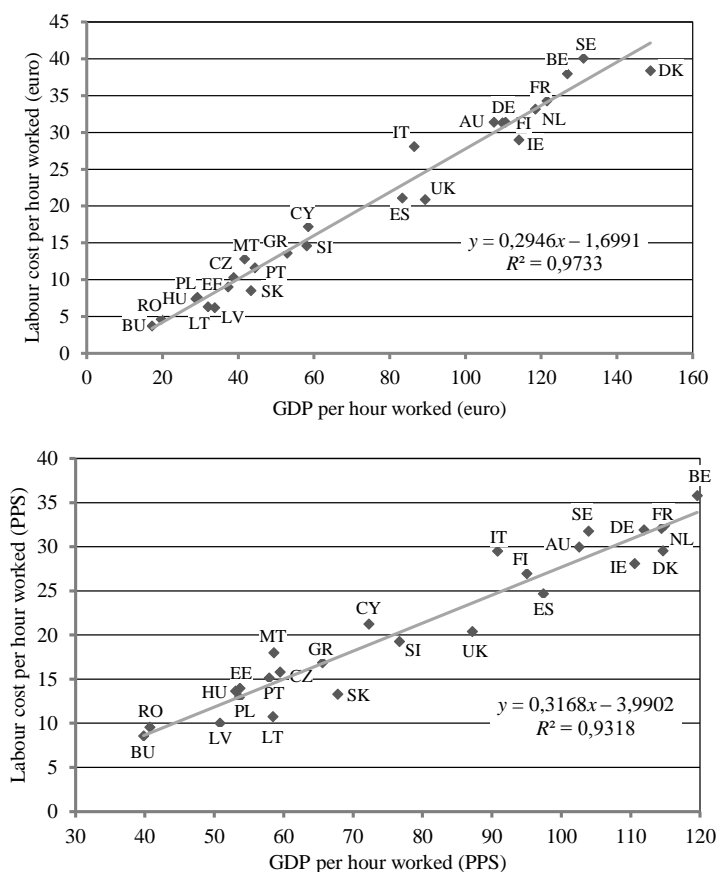
Finally, let us examine the often-cited relationship between euro wages and real productivity, which has been claimed to demonstrate that wages are lagging behind in Hungary. The horizontal axis of Figure 5 shows the relative real productivity, while the vertical axis illustrates labour costs in euros.

Figure 5. Nominal hourly labour costs and the volume of GDP in 26 EU member countries, 2013
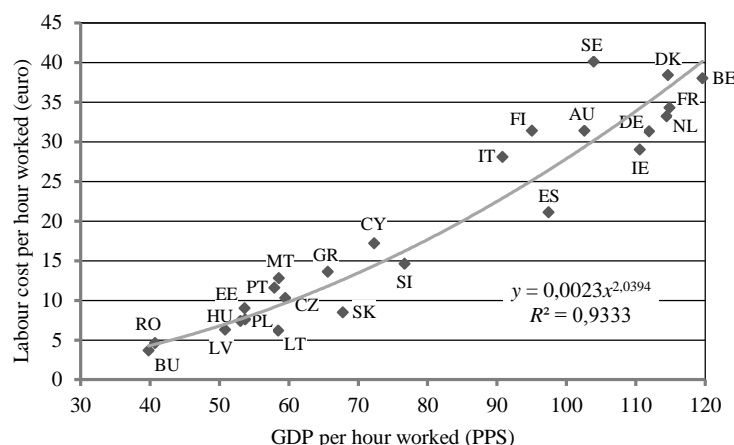
It can be seen that the best fit expressing the relationship between nominal wages and real productivity is not a linear but a quadratic regression curve. The explanation is that the nominal (euro) wage cost can be decomposed into the product of the producer real wage in PPP (see Figure 4, lower part, vertical axis) and the price level index of GDP (see Figure 1, vertical axis),[22] and both are closely related to the level of real productivity, with coefficients close to 1. In Figure 5, just as in the previous ones, the data point of Hungary lies very close to the regression curve, which suggests that, if conducted properly, the comparison of nominal wages and real economic performance indicates no disconnection between the two. It should be noted, however, that if the roughly 5-10 percent undervaluation of the forint was eliminated, wages expressed in euro would rise at a similar rate, and this level would still be in line with real productivity.

4. Conclusion

In this article, I demonstrated that common notions and political slogans expressing the perception that Hungary's prices are too high, while wages are too low as compared to the country's real economic performance, are based on illusions and convey further illusions. They carry the false promise that Hungarian wages could be

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[22] Formally: NLC(i)/NLC(eu) = RLC(i)/RLC(eu)*PLI(i) where NLC, RLC and PLI, respectively, denote nominal labour cost (in euro), real labour cost (in PPP) and the price level index (the ratio of PPP to the exchange rate). The subscript i, denotes the ith EU member country and eu refers to the EU-average.

raised significantly without substantial convergence in the level of the country's productivity. What Hungary – similarly to other new EU member countries – really needs is a long-term strategy fostering the growth of productivity, as this provides the only solid basis for longer-term wage convergence to the level of the more advanced countries of the European Union.

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