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MORE MONEY DOES NOT MEAN MORE BIG MACS – ANALYSIS OF PHYSICIANS' PURCHASING POWER IN EUROPEAN COUNTRIES

Abstract

Purpose: One of the major determinants of the well-being of citizens is the purchasing power of their income. Recently, there has been a significant outmigration of physicians from countries with low GDP per capita to those with high GDP per capita. This movement is often driven by the perception that higher nominal salaries provide better purchasing power parity (PPP). This research paper employs the Big Mac Index to examine whether PPP is higher in countries with higher GDP per capita than in countries with lower GDP per capita.

Methodology: Data were collected for this study via Google and PubMed search engines, using words like "physician purchasing power parity", "physician salary in 2020", and "the Big Mac Index in 2020". Then, the salaries adjusted for PPP and the Big Mac Index were used to calculate the number of Big Macs that can be purchased.

Results: The highest number of Big Macs could be bought in Turkey, the country with the lowest GDP on our list. The number of Big Macs far exceeds the maximum that can be bought in high-GDP countries such as Germany, the Netherlands, and Ireland. In Hungary, a country with a low GDP, a comparable number of Big Macs could be bought as in Germany, the Netherlands, and Ireland.

Conclusion: Thus, high nominal salaries in countries with a high GDP per capita do not necessarily translate into greater PPP. Physicians should reconsider outmigration if it is purely for economic reasons. Outmigration is a demanding effort that can result in financial disappointment.

Keywords: Purchasing power parity, medical doctors, salaries, economic migration

1. *Introduction*

In this paper, we will analyze the purchasing power of physician salaries across various European countries. The Big Mac Index will be used to calculate the total number of Big Macs a physician can buy. Today, many physicians decide that they want to follow the money and earn more for the work they do. This is especially true in the European Union (EU). One of the main principles of the EU is freedom of

movement, and more physicians migrate to the EU than any other highly regulated profession (Hervey, 2017). In general, they choose to move from countries that have a low gross domestic product (GDP) per capita to countries with a high GDP per capita (Hervey, 2017). GDP per capita is a measurement in economics that expresses a country's economic production per person, and it is evaluated by dividing a nation's GDP by its population (Hayes, 2022). Countries with a high GDP per capita are usually those that are industrial and developed. The migration of healthcare professionals is particularly evident from Eastern and Southern Europe (Hervey, 2017). For example, Hervey (2017) states that doctors in Estonia make €600 a month, and that many physicians in that country believe that their salary is insufficient to cover their monthly expenses. In addition, Hervey (2017) states that health expenditure per capita is different in every country, and because of this, not every country can reward its graduates equally. Western European countries, such as Luxemburg, Denmark, and Germany spend the highest monetary amount per capita on health, nearly €4,000 per year, while Eastern European countries spend much less, from €816 in Romania to €1,371 in Hungary (Hervey, 2017). Hervey (2017) believes that this results in large salary differences for doctors in Eastern European countries compared to Western European countries. Salaries in Western European countries, i.e. those with a higher GDP per capita, can be four to five times higher than in Eastern European countries (Hervey, 2017). Okeke (2013) found that, in general, economic conditions contribute to the increase in healthcare workers relocating from developing countries. The author found that a one percentage point reduction in GDP per capita leads to an increase in physician relocation by between 3.4 and 3.6 percent in the next period (Okeke, 2013). Moreover, Okeke (2013) found evidence that after the implementation of a salary increase program in Ghana, according to which doctors' salaries rose by between 75% and 150% over a six-year period, the migration of doctors to foreign countries dropped by approximately 10%. Such significant reduction in the migration of doctors was not observed in African countries that did not implement a similar wage increase program (Okeke, 2014). Furthermore, Okeke (2014) calculated the wage elasticity of migration to be between -0.06 and -0.13 in Ghana since the implementation of the program. On average, a 0.15% increase in regional earnings per capita is associated with a 10% increase in the newcomer population (OECD, 2022). Underdeveloped nations are becoming the leading suppliers of newcomer physicians. For example, 20% of migrant physicians in the United Kingdom (UK) originate from Africa, while 30% of newcomer doctors in the United States come from India and Pakistan (Vujicic, 2004). The extent of population migration from any country depends on both the supply and demand for newcomers and the mechanism through which supply responds to demand.

Vujicic (2004) stated that an individual is likely to move out if

$$Wf - Wd - C > Z,$$

where C is the direct monetary value of relocation, Wf and Wd represent foreign and domestic income, respectively, while Z is the compensating differential for staying in the source country. If the non-monetary job attributes are considered, the formula becomes

$$U(Wf, Jf) - U(Wd, Jd) - C > Z,$$

where J represents the conditions of employment, such as opportunities for advancement, safety, prestige, housing, transportation, and lack of stress (Vujicic, 2004).

According to Eurostat (2023a), in 2022, Luxembourg and Ireland documented the largest GDP per capita in the EU. Luxembourg's GDP stood at 161% above the average GDP per capita in the EU, followed by Ireland (134%). In contrast, Bulgaria had the lowest GDP per capita, at 41% below the EU average. Luxembourg's high GDP per capita is largely attributed to a large number of foreign residents who work in the country and contribute to its GDP. However, these foreigners are not counted as part of Luxembourg's resident population, and their consumption expenditure is recorded and documented by the financial institutions of their national countries of origin (Eurostat, 2023a).

Furthermore, Eurostat (2023a) reports that Ireland ranks as the second-highest EU Member State in terms of GDP per capita. A significant portion of this figure is attributed to foreign contract manufacturing associated with assets owned by large multinational companies. A noteworthy proportion of these earnings ultimately returns to the owners of the companies in their native countries (Eurostat, 2023a).

As reported by Eurostat (2023a), Denmark, the Netherlands, Austria, and Belgium each had a GDP per capita more than 20% above the EU average.

In most Eastern European nations, such as Poland, Romania, and Estonia, between 50% and 60% of doctors or final-year medical students consider and plan to leave their home country to work abroad (Hervey, 2017). In Estonia, this trend has led to severe shortages, with some areas lacking family physicians within a 100-kilometer radius. Romania, which has the lowest healthcare expenditure per capita at €816, has already lost half of its doctors, while 10% of the population reported going without healthcare services. The healthcare systems of the newest EU Member States suffer most from the physician exodus (Hervey, 2017).

The UK and the EU countries have made restrictions on the number of physicians that can be recruited from each country, because the physician workforce in those countries could otherwise be completely diminished. Croatia is among the affected countries, having lost 570 doctors—approximately 5% of its total physician workforce—to relocation within the EU since joining the bloc in 2013. As Hervey (2017) noted, this trend continues, with more physicians leaving or planning to leave.

This paper demonstrates that a high GDP per capita does not inevitably correspond with a high purchasing power parity (PPP) for physicians. To assess the net PPP, we will subtract personal income tax from the published PPP salaries for the year 2020. Based on these results and the Big Mac Index, we will calculate the total number of Big Macs that can be purchased in each country.

2. Big Mac Index

In line with the statements of Dyvik (2023), the Big Mac Index is a tool created by The Economist to measure differences in currency values across countries. The value of a Big Mac hamburger is the standard used by the Big Mac Index (BMI) to estimate if the currency of a country is over- or undervalued. According to Dyvik (2023), this new development by The Economist has facilitated the process of computing and estimating exchange rates for the currencies of various countries and their purchasing power parities (PPPs). The index measures the currency of each country and compares it to the price of the Big Mac hamburger, which can be bought at McDonald's restaurants in countries around the world. The Economist transforms the average national price of a Big Mac into U.S. dollars two times a year, using the exchange rate at that moment. The argument is that the Big Mac is a standardized product sold globally, and therefore, its price is expected to be the same in every country. Thus, in line with Dyvik's (2023) assertions, the variations in the Big Mac price calculated in U.S. dollars reflect the differences in the purchasing power of each currency.

PPP is based on the idea that goods should have the same price in different countries across the globe when adjusted for exchange rates at the time. PPP is the ratio of prices in national currencies of the same good or service across countries (Investopedia Team, 2023). The PPP formula is:

$$S = \frac{P1}{P2},$$

where S is the exchange rate of currency 1 to currency 2, P1 is the cost of good X in currency 1 and P2 is the cost of good X in currency 2 (Eurostat, 2023b).

However, many different elements in the economies of countries determine their PPP. Such elements, according to Dyvik (2023), are tax rates, wage regulations, the level of market competition, and whether components need to be imported. They all contribute to price variations across countries and to inflation. Since the Big Mac is produced using roughly identical ingredients in all countries, the BMI stays away from one of the crucial challenges commonly related with absolute PPP. On the other hand, there is also likely to be a difference between the domestic fundamental costs of the materials used to make a Big Mac and those in foreign countries. These price differences can also fluctuate with inflation, demonstrating that the proportion reflected in the indexes is influenced by both relational inconsistencies and monetary principles (Clements et al., 2007). Clements et al. (2007) stated that exchange rates are more volatile than prices and this is a well-known empirical regularity. The Big Mac prices demonstrate this regularity very well (Clements et al., 2007). Therefore, it is not surprising that significant and sustained deviations of exchange rates from the BMI have been observed. However, the Big Mac prices tend to lag behind overall inflation and exhibit a significant level of adhesiveness over a 1-year horizon (Portes & Atal, 2014). Moreover, according to Portes and

Atal (2014), the Big Mac Index has some predictive capability for certain groups of high-income countries as they gravitate towards a PPP rate. On the other hand, in line with the authors' statements, for a considerable group of emerging markets the currencies deviated from the uniformity and the BMI has no forecasting power. Thus, the BMI must be augmented before it has significant real potential because small and large over- and underestimations of currency values based on the BMI published by The Economist cannot be accepted as a dependable measure of mispricing (Clements et al., 2007). According to Clements et al. (2007),

$$S = \frac{P}{P^*},$$

where P is the domestic currency cost of a box of merchandise at home, and P^* is the cost of the same box in a foreign country, while S is the spot exchange rate (the domestic currency cost of a unit of foreign currency). Thus, instead of the absolute PPP in the above-mentioned form, it really holds the following form:

$$S = B\frac{P}{P^*},$$

where B is the bias that equals B = 1/K, where K is a constant of integration. In logarithmic terms, the bias becomes a lowercase b and equals b = -k (Clements et al., 2007). In line with the statements of Clements et al. (2007), the lowercase k is the long-run or equilibrium value of the real exchange rate. Lowercase letters denote logarithmic values of the variables and so the spot exchange rate equals $s = p - p^*$, while with the adjusted bias it equals $s = b + p - p^*$ (Clements et al., 2007). Clements et al. (2007) state that when the bias is allowed, the BMI follows the exchange rates proficiently over the medium and longer-term in agreement with the relative PPP theory. Still, even when the bias is accounted for, the adaptation to divergences from consistency tends to be fully completed over a period of three to six years. As Clements et al. (2007) stated, the bias-adjusted BMI shows better predictability than the random walk model in all but the one-year horizons. Thus, it has significant forecasting ability concerning future currency values. However, it continues to face significant resistance when predicting currency values within a 1-year horizon (Clements et al., 2007; Portes & Atal, 2014).

3. The politics of physician salaries in the EU and other countries

Indeed (2023) states that, in general, the market impacts salaries. Other job-related factors–like the availability of a position, the demand for the position, the number of available candidates for the position, or the number of people seeking education for the position–impact how high the salary will be. Large companies will try to offer fair compensation to their employees, considering what is required to successfully perform a specific job. Companies offer salaries based on their budget and the funds allocated for each role. According to Indeed (2023), data from market surveys are often used to determine salary ranges. In the U.S., Mr. Collins, a chief officer at the Medical Group Management Association in Englewood, Colorado, says that 99% of the time, reimbursement aligns with the marketplace (Darves, 2011). According to Darves (2011), there are several physician compensation models. The most common is the straight salary or minimum income guarantee, often seen in large academic settings or large corporate and physician-owned practices. In this model, the reimbursement level is preset, so physicians know exactly how much they will earn. Another model is equality or equal shares, in which the remaining earnings after expenses are distributed equally among the group's doctors. In the production or productivity-based compensation model, the doctors are paid based on a proportion of billings or collections, or according to the resource-based relative value scale (RBRVS) units assigned to specific procedures or types of patient visits. In this case, both fixed and variable practice costs are distributed among the doctors. The capitation or productivity plus capitation model involves distributing prepaid healthcare premiums uniformly to contracted provider groups to cover specialty services for a defined enrollee population.

As stated by the OECD (2024b), in many European countries, healthcare is primarily financed through government spending and compulsory health insurance, based on financial agreements. Governments determine the amount and structure of physician salaries by regulating fees or setting salaries for physicians working in the public sector. Hervey (2017) reports that health spending per capita varies significantly across countries, which in turn leads to differences in physician salaries. The salary influences the attractiveness of general practice and various specializations (OECD, 2024c). The

OECD (2024c) reports that the salary of a doctor represents average gross annual income, typically excluding practice expenses for self-employed doctors (except in Belgium where these expenses are included). In some countries, the distinction between employed and self-employed doctors is blurred, as employed physicians are also allowed to have a private practice. Some self-employed doctors receive only a portion of their reimbursement through salaries. In addition, the OECD (2024c) reports that there are many limitations in terms of remuneration data, which can lead to underestimation. These limitations include payments for overtime work, bonuses, income from private practices, the fact that data in some countries may relate only to the public sector, in which doctors tend to be paid less than those working in the private sector, and informal payments, which can be common in some countries. As stated by the OECD (2024c), in the majority of nations, the compensation for doctors has increased since 2010; however, the rate of increase has differed among countries, with Hungary experiencing a particularly strong rise. The Hungarian government substantially raised the salaries of both specialists and general practitioners over the past decade. This policy aimed to reduce doctor emigration and, consequently, address healthcare personnel shortages the country was facing. According to the OECD (2024c), in some countries, the remuneration of doctors decreased over the past decade. This is especially true for Portugal, Slovenia, and the UK. In Portugal, salaries declined between 2010 and 2012 and, although they have risen since then, they remained lower in 2020 than in 2010. In the UK, salary reductions affected not only doctors but also nurses and other NHS staff, as noted by the OECD (2024c).

Recently, Croatia has implemented a new salary system for employees in the government and public service sectors. The goal was to increase salaries, make these jobs attractive to new, young, and talented employees, and ultimately boost future employment rates. Prior to the introduction of this new system in June 2023, the government raised the lowest salaries by €100, €80, or €60 for 214,000 government and public sector employees. In October 2024, the basic salary will be increased by 5%. As a result, the basic salary is expected to have risen by 40% since 2016, according to the Ministry of Justice of the Republic of Croatia (2024). The new salary coefficient for specialist physicians will rise to 3.82, which translates into a gross monthly salary of up to €3,618. This represents an increase of €585, or 19.3%, in the gross salary of specialist physicians, compared to the gross salary of specialists in 2022 (Osijek Express, 2024). By comparison, non-specialist physicians will receive a gross salary increase by €355, or 14.7%, with their new salary coefficient set at 2.920 (Osijek Express, 2024).

Loguidice (2021) states that the cost of living in a country is defined by the funds required to attain and maintain a certain level of comfort within a location, and that it covers basic living expenses, such as housing, food, taxes, and healthcare. The average purchasing power of physicians is related to this cost of living. According to Loguidice (2021), the United States and France had the highest cost of living indices, while Mexico and Spain reported both lower remuneration and lower cost of living indices. Male physicians earned more than their female counterparts in all countries. Gender-based income disparities were the smallest in the United States and Spain, and the largest in Mexico (Loguidice, 2021).

In 2020, 26% of doctors reported a decrease in income compared to the previous year, with the main contributing factor being COVID-19 (Loguidice, 2021). As reported by Loguidice (2021), in the United States, the proportion was even higher, with 41% of physicians experiencing a salary decrease and only 22% reporting an increase. The most likely cause was isolation protocols for infected patients, which led to delays in the treatment of non-emergent conditions. In contrast, in the United Kingdom, income increased by 34%, which was attributed to career development, reimbursement increases through bands based on years of service, and a national reimbursement increase.

According to Loguidice (2021), the average net worth for all families in the United States was $746,820, with the median net worth at $121,760. The net worth of U.S. physicians is higher than the net worth of physicians in other countries.

4. Materials and methods

This comparative review paper examines the PPPs related to the cost of buying a Big Mac in 2020 for physician specialists within different European countries. The PPPs of countries with low GDP per capita (especially those belonging to the former Eastern Bloc of Europe) were compared to the PPPs

of countries with high GDP per capita (the Western Bloc of Europe), and also among themselves. The Google and the PubMed search engine were used with keywords like "physician PPP" and "physician salary in 2020", as well as "Big Mac Index in 2020". The personalized income tax was calculated using the available tax brackets for 2020, which were collected from webpages such as the OECD Library, Expat Info, Orbitax, or the respective countries' specific revenue and custom webpage. These webpages were developed and are maintained by credible tax specialists covering countries worldwide. The method described by Kagan (2023) was used to calculate individual income tax rates from the tax brackets. For practical purposes, other taxes, such as social security taxes, were not used in these calculations. The tax rates, personal income tax brackets, and calculations of the personal income tax rates are available in Appendix B attached to this paper. The results of this paper were analyzed using Excel and ranked from highest to lowest based on the number of Big Macs that could be purchased.

Yanatma (2023) analyzed and recorded the gross annual and PPP-adjusted salaries of physicians in Europe. Ziggurat Realestatecorp (2020) published the Big Mac Index in 2020, and their table can be found in Appendix A attached to this paper. The Euro to US Dollar Spot Exchange Rates for 2020 (Exchange Rates.org.uk, 2020) were used to convert euros to dollars. The average exchange rate in 2020 was 1 EUR/1.142 USD (Exchange Rates.org.uk, 2020a-i). In 2024, the OECD published a gross domestic product indicator by which countries can be ranked by the magnitude of their GDP (OECD, 2024a). The OECD webpage (2024a) allows for the rankings by magnitude of GDP to be analyzed by year (OECD, 2024a). Their graph for 2020 can be found in Appendix A attached to this paper. The GDP magnitudes of the countries analyzed by Yanatma (2023) were taken from this graph and ranked from highest to lowest in Table 1 in the results section of this paper (Yanatma, 2023; OECD, 2024a; Table 1).

In this paper, the number of Big Macs was calculated for each country based on their respective PPP-adjusted salaries. Only the countries analyzed by Yanatma (2023) were included in the calculations. The calculation procedure was carried out in the following steps:

1. The PPP-adjusted salary was converted from euros to dollars using the spot exchange rate in 2020 (Exchange Rates.org.uk, 2020a-i),
2. Income tax rates were calculated based on the tax brackets of each country using the method described by Kagan (2023). If the country used a flat tax rate, that tax rate was used instead. If necessary, the domestic currency of the country was converted to euros prior to the calculation,
3. The net PPP salary was calculated by subtracting the personal income tax in U.S. dollars from the PPP in U.S. dollars,
4. The Big Mac Index in 2020 (Ziggurat Realestatecorp, 2020) was used to determine the price of a Big Mac in 2020 for each analyzed country,
5. The number of Big Macs was obtained by dividing the net PPP by the price of a Big Mac. An Excel spreadsheet was used to rank the results from highest to lowest.

5. Results

After applying the methodology, Table 1 and Table 2 were constructed. In Table 1, countries are ranked from the highest to the lowest GDP per capita in 2020. In Table 2, countries are ranked by the number of Big Macs that can be purchased, from highest to lowest. Next to the number of Big Mac that can be purchased, the GDP rank of each country from Table 1 is listed. The net PPP amounts and the personal income tax rate of each country are also listed.

Table 1 Countries ranked from the highest to the lowest GDP per capita in 2020 according to the OECD (2024)

	Country	GDP per capita 2020 ($/capita; ranked from largest to smallest)
1.	Ireland	97,165.00
2.	Norway	67,117.00
3.	Denmark	62,544.00
4.	Netherlands	61,067.00
5.	Germany	57,905.00
6.	Sweden	57,690.00
7.	Belgium	55,729.00
8.	Iceland	55,626.00
9.	Finland	53,658.00
10.	France	49,181.00
11.	UK	48,006.00
12.	Italy	44,202.00
13.	Czech Republic	43,913.00
14.	Slovenia	42,033.00
15.	Lithuania	41,168.00
16.	Estonia	40,116.00
17.	Spain	38,976.00
18.	Poland	35,891.00
19.	Portugal	35,875.00
20.	Hungary	35,016.00
21.	Slovak Republic	34,989.00
22.	Latvia	33,726.00
23.	Greece	29,088.00
24.	Turkey	28,678.00

Source: OECD (2024a)

According to Table 1, Ireland has the highest GDP per capita among the listed countries, while Turkey has the lowest GDP per capita.

Table 2 Countries ranked by the number of Big Macs that can be purchased and GDP per capita in 2020

Country	PPP salary (€)	PPP salary ($)	Tax income (%)	Net PPP salary ($)	Price of Big Mac ($)	Number of Big Macs	GDP per capita rank
1. Turkey	85,878.00	98,072.68	32.79	65,914.65	2.04	32,311.10	24
2. Netherlands	13,5479.00	154,717.02	36.27	98,601.16	4.79	20,584.79	4
3. UK	11,0553.00	126,251.53	32.37	85,383.91	4.28	19,949.51	11
4. Germany	13,6010.00	155,323.42	39.10	94,591.96	4.79	19,747.80	5

Country	PPP salary (€)	PPP salary ($)	Tax income (%)	Net PPP salary ($)	Price of Big Mac ($)	Number of Big Macs	GDP per capita rank
5. Ireland	12,1743.00	139,030.51	34.20	91,482.07	4.79	19,098.55	1
6. Hungary	54,054.00	61,729.67	15.00	52,470.22	2.89	18,155.78	20
7. Finland	90,044.00	102,830.25	15.94	86,439.11	4.79	18,045.74	9
8. Spain	81,127.00	92,647.03	16.90	76,989.69	4.79	16,073.00	17
9. Czech Republic	58,594.00	66,914.35	15.00	56,877.20	3.80	14,967.68	13
10. Iceland	101,137.00	115,498.45	45.64	62,784.96	4.40	14,269.31	8
11. France	76,524.00	87,390.41	22.60	67,640.18	4.79	14,121.12	10
12. Norway	68,339.00	78,043.14	4.07	74,866.78	5.55	13,489.51	2
13. Sweden	71,869.00	82,074.40	6.48	76,755.98	5.76	13,325.69	6
14. Belgium	100,318.00	114,563.16	44.76	63,284.69	4.79	13,211.83	7
15. Italy	79,123.00	90,358.47	34.37	59,302.26	4.79	12,380.43	12
16. Denmark	109,897.00	125,502.37	55.90	55,346.55	4.58	12,084.40	3
17. Slovenia	62,709.00	71,613.68	30.07	50,079.45	4.79	10,455.00	14
18. Estonia	52,652.00	60,128.58	20.00	48,102.87	4.79	10,042.35	16
19. Poland	35,734.00	40,808.23	33.07	27,312.95	2.79	9,789.59	18
20. Slovak Republic	44,967.00	51,352.31	20.04	41,061.31	4.79	8,572.30	21
21. Greece	46,003.00	52,535.43	26.39	38,671.33	4.79	8,073.35	23
22. Portugal	48,008.00	54,825.14	32.56	36,974.07	4.79	7,719.01	19
23. Lithuania	36,146.00	41,278.73	20.00	33,022.99	4.79	6,894.15	15
24. Latvia	33,835.00	38,639.57	21.23	30,436.39	4.79	6,354.15	22

Sources: 1. Yanatma (2023); 2. Ziggurat Realestatecorp (2020); 3. Exchangerates.org.uk. (2020a-i); 4. OECD (2021a-o); 5. Pwc (2021); 6. Skatturinn (2021); 7. Trading Economics (2021); 8. Orbitax (2021); 9. Neotax (2021); 10. Kagan (2023); 11. iCalculator™ IT (2021); 12. HM Revenue & Customs (2021); 13. Get Golden Visa (2021); 14. Expatax (2021); 15. Expat Info (2021); 16. Citizens Information (2024)

Analyzing the PPP in terms of buying a Big Mac in Table 2, Turkey has the strongest PPP, because the largest quantity of Big Macs can be purchased there. The number of Big Macs that can be purchased in Turkey is significantly higher than in the other countries listed. On the other hand, Table 1 shows that Turkey has the lowest GDP per capita of all the countries listed.

Hungary ranks sixth, not far behind Ireland, and has a similar PPP to Finland, which ranks ninth in terms of the size of its GDP. Despite ranking 20th in terms of the GDP size, Hungary can purchase a similar number of Big Macs as Ireland, which ranks first in terms of its GDP size. The Czech Republic ranks ninth and has a better PPP than Iceland, France, Norway, Sweden, Belgium, Italy, Denmark, and Slovenia, all of which rank higher or similarly in terms of their GDP compared to the Czech Republic. The Czech Republic's PPP is twelve places higher than that of the Slovak Republic, placing it in the top of the middle third, while the Slovak Republic is in the middle of the bottom third of the table. However, the Slovak Republic has a higher PPP than Portugal and Greece. Estonia ranks 18th, lower than the Scandinavian and Central- Western EU countries, but higher than Portugal (a Western country), Greece, Poland, and the other Baltic countries. It is located at the top of the lowest third of the PPP rankings, and is above the Slovak Republic. Lithuania and Latvia are both at the bottom of the table. Latvia has the lowest PPP in terms of buying a Big Mac.

6. Discussion

Turkey is undoubtedly the country with the strongest PPP, even surpassing all the Western countries listed, yet it has the lowest GDP per capita among them (Tables 1 and 2). One can purchase more Big Macs in Turkey than in any other country, with a significant difference. For example, the net PPP salary is by $28,677.31 higher in Germany than in Turkey, yet the Turkish physician's salary allows for the purchase of 12,563.3 more Big Macs than in Germany. Similarly, 11,726.21 more Big Macs can be bought in Turkey than in the Netherlands, and 12,361.49 more than in the UK. This divergence becomes even more pronounced when the Turkey's PPP is compared with other countries on the list. Thus, despite Turkey having the lowest GDP in Table 1, its PPP compared to Western economies is high. Hungary, another country with a low GDP, also ranks highly in terms of PPP strength. Hungary ranks sixth in terms of purchasing power of Big Macs (Table 2), yet it is a country with the fifth lowest GDP per capita (Table 1). Therefore, it is not surprising that a similar number of Big Macs can be purchased in Hungary–a country with a low GDP–as in Germany and Ireland, which are countries with high GDPs (Table 1, 2). One of the reasons for the high PPPs in both Turkey and Hungary are their strong mixed economies (CFI team, 2024). A mixed economy, as described by the CFI team (2024), combines elements of a planned economy with a market economy. In other words, the state is allowed to intervene to help the citizens live better lives, in case of problems on the free market, such as inflation. According to CFI (2024), a mixed economic system provides a lot of benefits to a society, such as well-organized appropriation of resources, stimulus for modernization and effective production, and the support of the government (Investopedia Team, 2024). For example, the government can intervene to prevent prices from rising or falling below affordable levels for the population. Indeed, Turkey's businesses are known to use price controls to fix prices when the government warns of rising inflation (English, 2023). For example, in January 2023, the Turkish Finance and Treasury Minister publicly encouraged price-fixing to combat inflation (English, 2023). At that time, Turkey's leading supermarket chains fixed prices for thousands of products, promising that it would protect the budget of customers and help the country's economy (English, 2023). The Minister congratulated them (English, 2023). It is likely that the price of a Big Mac was also reduced to make it more affordable for the general population. As shown in the tables, the price of a Big Mac in Turkey at $2.04 was the lowest, less than half of the EU's average price of around $4.79, even though, as noted by Yanatma (2023), the nominal salary of specialists in Turkey was among the lowest.

Similarly, Hungary also uses price fixing to shield households from inflation (Reuters, 2022). During the new wave of inflation in 2022, the government imposed upper limits on prices for milk, sugar, flour, sunflower oil, pork leg, and chicken breast, and announced that it could potentially further extend these price caps (Reuters, 2022).

7. Conclusion

This paper has demonstrated that possessing more money does not necessarily mean possessing more goods, as PPP does not always correlate with the amount of money possessed. Therefore, physicians should reconsider making migration decisions based exclusively on economic criteria, as outmigration can be costly in terms of time and energy, and may eventually be financially disappointing. Credible economic journalists and other experts served as the sources for this study. The Big Mac Index was used to calculate the number of Big Macs that can be purchased with the respective physician salaries in each of the countries, allowing for a comparison of the PPPs in high and low GDP countries. According to Dyvik (2023), PPP is affected by different elements such as tax rates, wage regulations, market competition, and the type of economic system of a country. Turkey's and Hungary's mixed economic systems regulate prices well, enabling physicians with relatively low salaries to potentially purchase the highest quantities of Big Macs. There are, however, limitations to the implemented methodology. First, the number of Big Macs purchased may not be consistent over time, especially in the short term, and particularly in emerging economies such as those from the former Eastern European Bloc. Clements et al. (2007) stated that exchange rates are volatile and can significantly affect the Big Mac Index, especially in emerging economies. Thus, the random walk model of the Big Mac Index has no short-term forecasting power in emerging economies, although it has a significant degree of stickiness in developed economies in the one- year

term. On the other hand, as stated by Clements et al. (2007), the incorporation of the bias into the Big Mac Index increases the forecasting power over the medium and long term. Therefore, according to Clemens et al. (2007), we can be certain that if all economic mechanisms in the countries remain the same, the same PPP strength will be repeated in three- and six-year cycles. Another limitation in this paper is the fact that only the individual, personal income tax amounts were deducted from the purchasing parity salaries of physicians in the respective countries. Other taxes such as social security, property, or taxes on goods in different countries were not subtracted due to practical reasons. Such taxes could potentially change PPP. The inclusion of social security taxes could significantly reduce the purchasing power of physicians, because more money would be subtracted from their salaries and given to the governments. This raises important questions: How much would the purchasing power of a physician decrease with the addition of social security taxes, and what causes social security taxes to be higher in some countries and lower in other countries? In addition, what causes taxes on properties and goods to differ between countries, and how much impact would they have on the purchasing power of physicians? Furthermore, other elements, such as benefits from the government, for example, the payment of medical tuition or healthcare insurance by the state, can also impact PPP. Broader studies are needed to answer these questions. Subtractions and additions of social security taxes, the taxes impacting the everyday cost of living, the benefits provided by the government such as university tuition payments and healthcare insurance payments, will need to be carried out for each country. In addition, it would be beneficial to clarify the mechanisms causing the differences in the taxes, benefits, and the cost of living. Such studies would likely require the use of Big Data automated technology, but they could ultimately provide a more detailed understanding of the differences in PPP between countries with low and high GDP per capita, as well as reveal mechanisms that countries could employ to increase the PPP of their citizens.

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