

The Diverging Economic Fortune of Dentists and Medical Doctors in Iran 2015-2024*

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December 16, 2024

Abstract

This paper examines the shifting career preferences of top-performing students in Iran’s national University Entrance Exam (Konkur), particularly the increasing preference for Dental Science over Medical Science. Despite similar training costs, durations, and prestige, the real wages of medical doctors have declined significantly over the past decade, primarily due to government-imposed price controls on medical services. In contrast, dentists have been able to maintain or even increase their real incomes by adjusting their fees in response to inflation. We analyze the economic factors driving this shift and discuss the consequences of price controls, including the migration of medical professionals and the growth of the aesthetic sector. Our findings suggest that, unless government policies are reformed, Iran faces a looming shortage of medical doctors, exacerbated by its rapidly aging population.

1 Introduction

Each year, Iran’s national University Entrance Exam (Konkur) for empirical sciences attracts more than half a million participants. Among the top 100–200 performers, nearly all consistently choose either Medical Science or

*This paper was written for the Public Finance course (ECON741) at the University of Wisconsin-Madison, taken by the author in Fall 2024 as part of the Minor in Economics.

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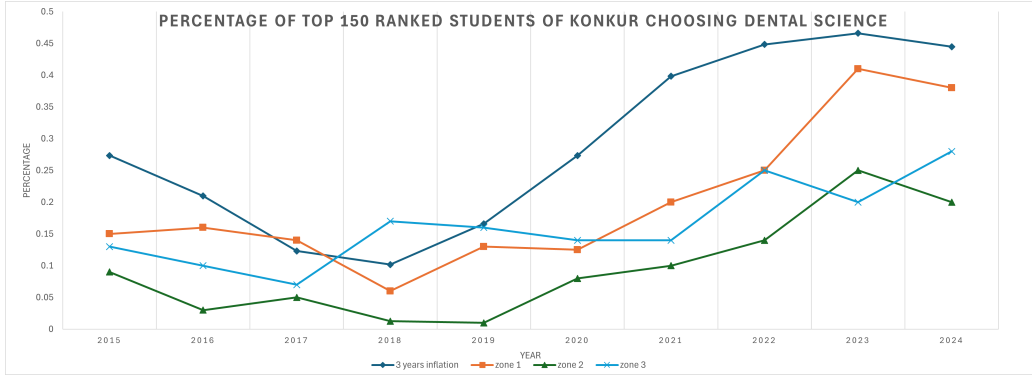


Figure 1: Share of top 150 ranked students choosing dental over medical science as their field of study

Dental Science as their field of study, as they have the freedom to select any major and university of their preference.

Over the past decade, there has been a significant shift among these top-performing students toward Dental Science over Medical Science. Figure 1 illustrates the growing share of the top 150 students in each region who have opted for Dental Science. The country is divided into three zones, where Zone 1 includes the most developed cities (e.g., Tehran), and Zone 3 represents the least developed areas (e.g., Zahedan). Notably, while very few students choose fields other than Medicine or Dentistry, the remaining majority opt for Medical Science.

By comparing recent years with the early 2010s, the proportion of students choosing Dental Science has more than doubled across all zones. This trend is particularly surprising given that many of the factors influencing students' decisions have remained largely unchanged:

- Cost and duration of training,
- Difficulty of the subjects,
- The prestige traditionally associated with Medical Science,
- Similar emigration prospects for advanced specialization abroad,
- Comparable training environments, such as residency and night shifts.

This paper proposes that the primary reason for this shift is economic: the real wages of medical doctors and dentists have diverged significantly over the past decade. While the costs and duration of training for both professions are similar, the real incomes, adjusted for inflation, tell a different story. We analyze the underlying economic forces, focusing on government policies and the structure of Iran’s healthcare system, to explain this divergence.

1.1 The Role of Real Wages in Career Choice

The choice between Medical and Dental Science is strongly influenced by real wages. Students often seek advice from their families or older peers—individuals already studying these fields or practicing professionally. Over several years, changes in the macroeconomic situation, such as wages, gradually affect perceptions among practitioners, which are then passed down to prospective students.

Older medical doctors, for instance, increasingly discourage new students from choosing Medical Science unless they plan to emigrate. This sentiment is driven by declining real wages. Our analysis of economic data reveals that the real income of medical doctors, even those working in private practice, has fallen by over 50% in the past decade when adjusted for inflation. Figure 2. In contrast, the real wages of dentists, most of whom work in private offices, have remained relatively stable. Figure 3. As a result, the relative real wage of dentists has improved substantially.

1.2 Why Have Medical Doctors’ Real Wages Fallen?

We argue that the decline in medical doctors’ real wages stems primarily from government policies. Healthcare in Iran is predominantly delivered through the public sector, where the government is the dominant player. Price controls imposed on medical services have kept fees below the rate of inflation, exacerbating the decline in real wages for medical doctors. In contrast, dental services are largely provided in private clinics and offices, where the government has limited influence. As inflation has soared, dentists have been able to raise their prices accordingly, maintaining their real incomes.

It is worth noting that medical specialties exclusively practiced in the private sector, such as cosmetic and aesthetic medicine, have flourished. Currently, cosmetic specialists are among the highest-earning medical practitioners in Iran. Iran has also become a regional hub for cosmetic surgery[1],

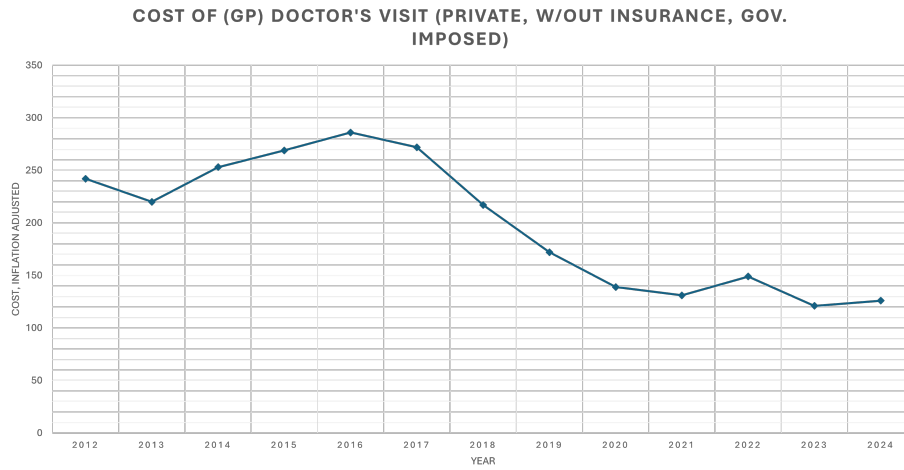


Figure 2: The real income per visit of GP doctors has fallen more than %50. Every physicians at their private offices charge this price, set by the government

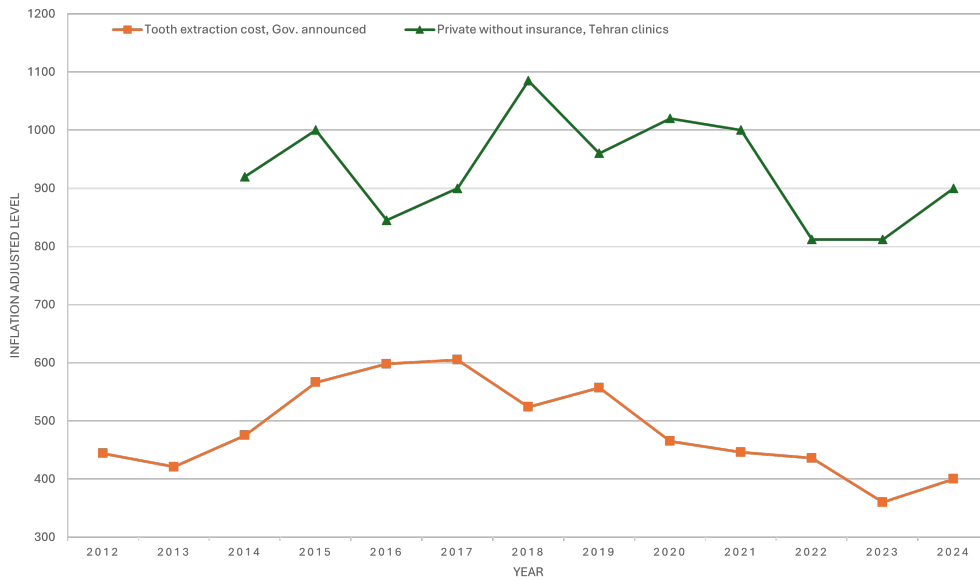


Figure 3: The real gov. announced price for private sector has fallen around 20 percents, while private dentists charge the same (or even more) real price. The cost of tooth extraction is taken as a benchmark for dentists' income.

attracting patients from across the Middle East. Many medical students now aim to specialize in cosmetic medicine or transition into aesthetic practices as a viable short-term solution to the wage crisis.

1.3 Long-Term Consequences of Price Controls

This paper highlights how price controls, while intended to make healthcare affordable, distort the allocation of resources. In the short term, shortages in medical care may not be immediately apparent, as practicing doctors have limited alternatives. However, many are increasingly shifting to the cosmetic sector or seeking opportunities abroad. Unlike careers in engineering or computer science, where skills can be transferred relatively easily, medical professionals face significant barriers to emigration. For example, most states in the United States require international medical graduates to repeat their residency training in accredited U.S. programs and pass licensing exams, regardless of their prior experience [2].

In the long term, the current trend will lead to a severe shortage of medical doctors in Iran. Combined with Iran’s rapidly growing elderly population—the second fastest-aging population in the world [11]—this shortage could result in a healthcare crisis. Addressing the root cause of the real wage divergence, particularly the effects of price controls, is essential to prevent this looming disaster.

1.4 Structure of the Paper

The remainder of this paper is organized as follows: Section 2 presents the sources of our data. Section 3 provides an overview of the healthcare structure in Iran. Section 4 identifies the factors affecting student decisions. Section 5 explores how inflation impacts wage perceptions and enumerates the factors influencing government policy on setting doctors’ wages. Section 6 describes a simple binary choice model for selecting either dental or medical science as a field of study. Section 7 discusses doctors’ responses to the current situation, including migration and the shift to the aesthetic sector. We conclude by asserting that if the government’s policy of imposing a price ceiling and keeping medical doctors’ fees low continues, Iran will face a severe shortage of medical doctors.

2 Data

The decisions of top-ranked students regarding their field of study are not officially published. However, Kanoon Farhangi Amoozesh (Ghalamchi), a private organization in Iran’s educational sector that provides nationwide simulation tests for the Konkur exam, publishes this data for its member students. Since most top-ranked students are members of this organization, the sample obtained covers more than 90% of the decisions made by students ranked 1-150 [3].

Medical fees for all doctors at different levels, in both the public and private sectors, are set by the government. This data can be obtained from the IRIMC website [4].

Macroeconomic data, such as the inflation rate, is obtained from the Iran Central Bank website [5]. Health care expenditure data was obtained from The World Bank.

2.1 Remarks

- The government sets the prices for medical doctors at various stages, both in the public and private sectors. These imposed prices serve as a reliable indicator of a general practitioner’s (GP) income, as GPs typically do not charge above the announced rates, and the majority of their earnings come from patient visits.
- We select the cost of tooth extraction as a benchmark for dentists’ income. This service is one of the few dental procedures covered by insurance and offered in public sectors, and its price is also regulated by the government. We consider this price to provide a lower bound for dentists’ earnings, as tooth extraction is among the least profitable dental services. In contrast, the costs of procedures such as root canals can vary significantly, with skilled dentists charging substantially higher fees. Therefore, we assume that the real relative wages for dentists fluctuate more sharply over the years compared to this benchmark ratio.

3 Healthcare Structure in Iran

In Iran, the healthcare system operates with a significant divide between medical and dental services in terms of government regulation and sector

dominance.

For medical care, physicians are required to adhere to government-mandated price controls, even at their private offices. More than 85% of medical services are provided through the public sector, where the government is the dominant player. Additionally, over 46% of specialized doctors work exclusively in the public sector. Iran has approximately 150,000 medical doctors, and the government prioritizes keeping healthcare costs low to ensure accessibility. [4]

To provide a relative sense of the cost of medical care, consider that a general practitioner's (GP) visit, without insurance, costs roughly the same as four 12oz cans of Coca-Cola. The relative price of medical care compared to other goods has been deliberately suppressed. In public hospitals associated with Tamin-e Ejtema'i—the primary Social Security Organization that provides health insurance for workers—services such as doctor visits and medications are entirely free for insured individuals.

In contrast, dental care operates largely in the private sector. Over 90% of dentists work in private clinics and offices, where prices are determined by market forces rather than government regulations. Iran has approximately 50,000 dentists, and only a small proportion of dental services are offered in public hospitals. Insurance coverage for dental care is limited, leaving most individuals to pay out-of-pocket for their treatments at private clinics.

This structural difference between medical and dental care—government-regulated pricing for medical services versus market-driven pricing for dental services—plays a crucial role in explaining the divergence in real wages and career preferences between these two professions.

4 College Major Choice: Dental or Medical?

When choosing their college major, students typically seek advice from three main groups of people:

- **General Public Opinion:** This group primarily consists of the students' parents, friends, or acquaintances who are not medical professionals. The general public's perception of doctors versus dentists tends to reflect societal stereotypes and media portrayals rather than current economic realities. We assume that students' initial views align closely with this group's opinion.

- **Current Medical or Dental Students:** Students often consult older peers who are already studying medicine or dentistry in universities. These students provide insights into the job market and academic challenges based on their interactions with practicing doctors and dentists.
- **Practicing Doctors and Dentists:** This group is the most informed about the current economic conditions. Practicing professionals have firsthand knowledge of their earnings, job satisfaction, and career challenges, making their opinions the most accurate and reliable.

The opinion of practicing doctors and dentists is particularly important because it forms the foundation for the views held by the second group—current university students. University students often seek advice about job prospects from practicing professionals as they approach graduation. Thus, we assume that the second group’s perception of economic conditions is largely influenced by the third group.

On the other hand, the general public’s opinion is shaped by limited access to accurate information about the economic realities faced by doctors and dentists. Most members of the public remain unaware of these issues unless they have close friends or family members working in the medical or dental professions. Consequently, media coverage and discussions on social networks play a significant role in shaping public perceptions.

4.1 Emigration Considerations

Given the current socioeconomic challenges in Iran, many students consider emigrating after completing their undergraduate studies, primarily by seeking admission into specialized programs abroad. However, the difficulty of securing admissions for further study in medicine and dentistry is roughly similar and significantly harder compared to other fields like engineering. Therefore, we omit this factor when analyzing students’ choices between medical and dental fields.

4.2 Factors Influencing Practicing Professionals’ Opinions

The opinions of practicing doctors and dentists—arguably the most critical group—depend on several key factors:

- Their real wage (inflation-adjusted income).
- Their wage trends relative to the inflation rate over the past several years.
- The overall socioeconomic conditions of the country.

We assume that the broader socioeconomic conditions affect both professions equally and thus omit this factor from our analysis.

4.3 The Impact of Inflation on Wage Perception

We propose that the perception of income among medical doctors and dentists is shaped not by short-term wage fluctuations but by the cumulative effect of several consecutive years of high inflation and low wage growth. If inflation spikes for only one year, but doctors experienced satisfactory earnings in prior years, their overall sentiment about income may remain unchanged. However, prolonged periods of low wage growth coupled with high inflation create a compounding effect that significantly reduces purchasing power and alters forward-looking expectations.

To illustrate this compounding effect, consider a scenario where annual wage growth (T_n) consistently lags behind inflation (i_n) by a substantial margin. For example, if the inflation rate remains around 40% annually and doctors' wages increase by only half of that, their purchasing power would drop by approximately 50% after four consecutive years. Therefore, we measure the wage erosion relative to inflation over the past four years using a compounded inflation index, denoted as CI :

$$CI_n = \frac{1 + T_n}{1 + i_n} \cdot \frac{1 + T_{n-1}}{1 + i_{n-1}} \cdot \frac{1 + T_{n-2}}{1 + i_{n-2}} \cdot \frac{1 + T_{n-3}}{1 + i_{n-3}}$$

Here, i_n represents the inflation rate in year n , and T_n represents the annual wage growth. The index CI_n captures the cumulative effect of wage increases relative to inflation, providing a clear measure of real wage decline over time. Figure 4 shows the GP's visit cost increase rate, set by the government, divided by inflation rate; $\frac{T_n}{i_n}$. Figure 5 shows the real cost of GP's visit compared to 2013, where it has steadily decreased.

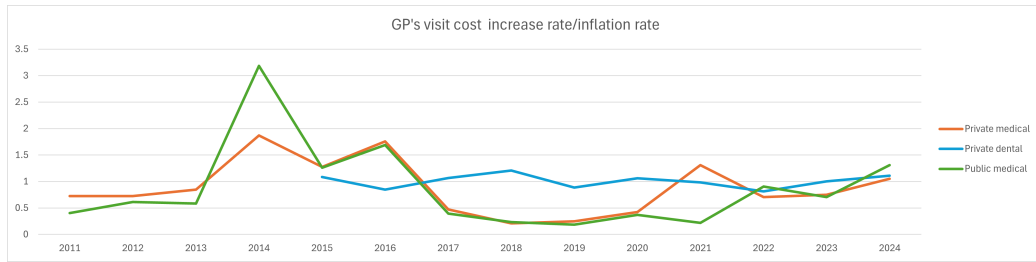


Figure 4: GP's visit cost increase rate/inflation rate

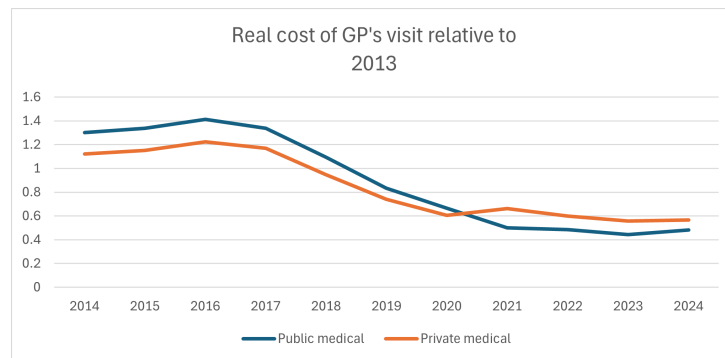


Figure 5: Real cost of GP's visit relative to 2013

5 How Are Medical Doctors' Prices Determined?

The 'Medical Council Act', approved by Parliament in 2004[6], explicitly states that the authority to set medical service fees in the private sector lies with the Medical Council Organization, a non-governmental organization (NGO) responsible for licensing Iranian healthcare professionals. For public sector tariffs, the organization serves only in an advisory capacity. However, for nearly a decade, this tariff-setting authority has been withdrawn from the Medical Council Organization, and the government now sets medical service prices even for the private sector.

5.1 Wage Determination for Medical Doctors

For medical doctors, annual wage growth (T_n) is determined by the government, as they are effectively price-takers. The key question becomes: how does the government set T_n ? The determination of these prices is influenced by several socio-political and economic factors.

- Government's healthcare budget
- Price control policies to combat inflation
- Legal obligations for affordable healthcare
- Influence of doctors' collective advocacy

5.1.1 Government's Healthcare Budget

As approximately 85% of healthcare services are provided in the public sector, the government effectively bears the financial responsibility for paying doctors' wages. When facing a significant budget deficit, the government often limits wage increases to levels below the inflation rate to control expenditures. Given limited budgetary resources, wage growth for doctors is often constrained, leading to a persistent lag behind inflation.

5.1.2 Price Control Policies to Combat Inflation

As part of its strategy to manage inflation, the government has adopted a policy of capping wage increases for public sector employees at a fraction of the inflation rate. This approach directly affects medical doctors, whose wages are regulated and controlled. For instance, between 2017 and 2021, the official rates for public-sector general practitioner visits increased at less than half the inflation rate. Accounting for the compounding effect, the prices of goods tripled relative to doctors' wages over this period.

5.1.3 Legal Obligations for Affordable Healthcare

Public expectations for low medical costs are rooted in both societal norms and legal frameworks. For example, Article 29 of the Constitution of the Islamic Republic of Iran states:[7]

“Access to social security, including health insurance, is a universal right, and the government is obliged to provide it for all individuals. The government is obligated, with consideration of national priorities and available resources, especially for the indigent, to provide social and health insurance services free of charge.”

This constitutional mandate reflects a widespread societal belief that healthcare should not be treated as a private good but rather as a public good provided by the government at minimal cost. Consequently, the government faces immense pressure to keep healthcare costs low, even during economic shocks. For instance, when the United States withdrew from the JCPOA in 2018 and imposed maximum pressure policies, government revenues fell significantly. While the government could print money to cover expenditures—driving inflation rates above 50%—it could not raise healthcare costs proportionally without triggering widespread public unrest.

5.1.4 Influence of Doctors' Collective Advocacy

When real wages decline significantly, doctors collectively voice their concerns and demand corrective measures. The extent to which these demands influence policy depends on the broader political structure and decision-making processes in Iran. Public pressure plays a crucial role in amplifying doctors' grievances.

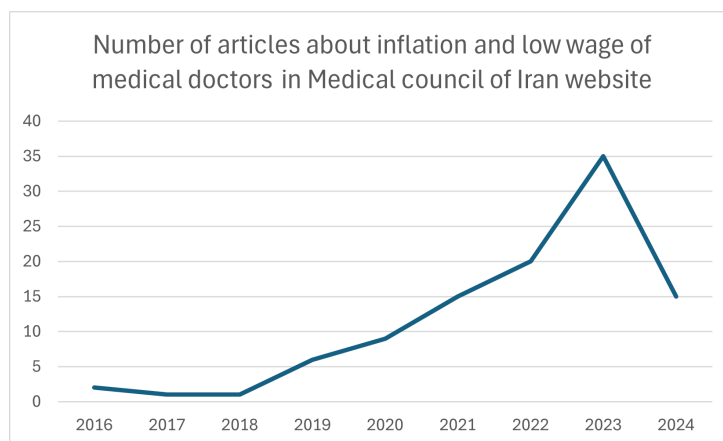


Figure 6: Number of articles about inflation and low wage of medical doctors in Medical council of Iran website, irimc.org, Obtained by Google advanced search.

In recent years, media coverage and public discourse surrounding doctors' wages have intensified. Articles and reports addressing the issue of high inflation and stagnant wages among medical professionals have increased significantly. For example, the Medical Council of Iran (IRIMC) has published a growing number of articles highlighting these concerns. Figure 6 illustrates the sharp increase in such publications in recent years. The growing exodus of doctors and increasing dissatisfaction have forced the government to respond. As a result, in recent years, the government has gradually increased healthcare costs in line with inflation, as shown in Figure 4.

5.2 Quantifying Public Awareness and Pressure

Public awareness of doctors' and dentists' economic conditions can serve as an indirect measure of pressure on the government. This level of awareness influences both the general public's perception of healthcare costs and the government's responsiveness to wage demands. In the same way that public opinion shapes students' career choices, it also contributes to the broader pressure on policymakers to address real wage declines. We use the number of articles about inflation and the low wages of medical doctors published on the Medical Council of Iran website each year as an indicator of how much this issue is covered in the media, as we do not have access to any data

directly representing public opinion.

6 Model

For each year from 2015 to 2024, let P represent the number of top 150-ranked students in each zone who chose dental science.

We assume a simple endogenous binary choice model as follows:

$$P = \beta_0 + \beta_r R + \beta_{po} PO + \beta_D D + \epsilon_s, \quad (1)$$

$$D = \beta'_{CI} CI + \epsilon_d, \quad (2)$$

$$\frac{1+T}{1+i} = \beta''_{hb} HB + \beta''_{po} PO + \epsilon_{t,n}. \quad (3)$$

where:

- P : Probability of choosing dental science over medical science for a student among the top 1–250 ranked students in region R .
- R : Region (or zone) of the national entrance exam.
- PO : Public opinion on the economic situation of dentists and medical doctors.
- D : Practicing doctors' opinions, which depend on CI_n , the compounding inflation factor (explained above).
- T : Government policy on annual wage increases for doctors, which depends on the inflation rate i , the healthcare budget HB , and public pressure to align wages with inflation (proxied by public opinion PO).

Throughout this model, we assume that dental costs and the fees charged by dentists increase with inflation, as can be seen from the data where the real cost has remained stable. Therefore, we normalize the data and focus solely on the economic situation of doctors.

6.1 Model Complexity and Simplification

The proposed model is inherently dynamic and complex. The relationships between factors are highly interdependent, involving causal loops. For instance:

- Doctors' opinions (D) depend on wages (T) set by the government. However, government wage-setting policies are also influenced by doctors' voices and demands.
- Public opinion (PO) impacts students' choices in two ways:
 1. Indirectly, through influencing non-doctor recommendations (e.g., parents or peers).
 2. Directly, by creating public pressure on the government to increase doctors' wages, which in turn affects doctors' perspectives and subsequent advice to students.

Due to these complexities and feedback loops, a simple linear regression model is insufficient. A dynamic model would better capture the interdependencies. However, to obtain tractable results, we simplify the model as follows:

1. We remove PO from the equation for T and hence CI because it appears in P .
2. We replace doctors' opinions (D) with the compounding inflation factor (CI).
3. We linearize CI , and combine it with T to approximate:

$$CI_n = \beta''_{hb} \overline{HB}_{\bar{n}} + \epsilon_{t,n}, \quad (4)$$

where the overline indicates the average over the past four years.

6.2 Final Regression Equations

We regress the following equations:

$$P_n = \beta_0 + \beta_r R + \beta_{CI} CI_n + \beta_{po} PO_n + \epsilon_c, \quad (5)$$

$$CI_n = \beta''_0 + \beta''_{hb} \overline{HB}_{\bar{n}} + \epsilon_{t,n}. \quad (6)$$

$$IV = \overline{HB}_{\bar{n}} \quad (7)$$

6.3 Instrumental Variable Method

We apply the instrumental variable (IV) method for HB in the CI equation. We assume that the healthcare budget (HB) influences student views only indirectly—through its impact on government-set wages for doctors.

The results are presented as follows. The root mean square error (RMSE) for both cases is very small; however, this is not a strong indication of how well the model performs. As mentioned earlier, the model should be dynamic, and capturing causal effects using linear regression is simplistic. The high beta coefficient for CI , in comparison with other dependent variables, indicates that the inflation-adjusted real wage over several consecutive years significantly influences students' decisions to choose dental science over medical science.

Table 1: Regression results with private doctor's cost

P	Coefficient	Std. Err.	[95% Conf. Int.]
$CI_{private}$	0.1599107	0.2822897	-0.3933669, 0.7131883
R	-0.01825	0.0135729	-0.0448524, 0.0083524
PO	0.0114604	0.0029532	0.0056722, 0.0172486
$cons$	-.0286107	.2491171	-.5168712, .4596498

R-squared = 0.5352

Root MSE = 0.06442

Table 2: Regression results with public doctor's cost

P	Coefficient	Std. Err.	[95% Conf. Int.]
CI_{public}	.1458842	.2633773	-.3703258, .6620943
R	-.01825	.0143212	-.0463191, .0098191
PO	.0136039	.2477824	-.5108505, .4604387
$cons$	-.0252059	.2477824	-.5108505, .4604387

R-squared = 0.4918

Root MSE = .06736

7 Medical Doctors' Response

The responses of medical doctors to falling real wages can generally be categorized into two choices: 'exit' or 'voice'. In recent years, however, this has increasingly shifted to an "exit or switch to the aesthetic sector" scenario, where many doctors choose to become aesthetic physicians.

7.1 Switching to the Aesthetic Sector

Many doctors, particularly general practitioners (GPs), are transitioning to the aesthetic medicine sector[8], which includes performing non-surgical procedures such as Botox and filler injections. This trend can be attributed to several factors:

- **Low Entry Barriers:** Becoming an aesthetic physician does not require specialization. General practitioners can enter this field by attending private workshops that provide basic training in cosmetic procedures.
- **High Profitability:** Aesthetic procedures are far more lucrative than traditional medical practice. For example:
 - A 10-minute Botox or filler injection can yield profits 20–40 times greater than the cost of a standard 15-minute doctor visit.[9]
 - Physicians performing aesthetic procedures can earn 10–20 times more per hour compared to consulting patients in clinical settings.
- **High Demand for Beauty Services:** Iran has a booming aesthetic industry due to cultural and societal factors. For instance, Tehran is often referred to as the "nose job capital of the world," reflecting the widespread demand for cosmetic procedures. (The reasons behind this phenomenon are beyond the scope of this study.)

As a result of these incentives:

- Doctors with sufficient initial capital often open their own private beauty clinics, taking advantage of the sector's high profitability.
- Those without the means to establish their own clinics seek employment at existing private beauty clinics.

- Specialists, such as dermatologists and anesthesiologists, are also increasingly shifting to the aesthetic sector, following general practitioners' lead.

7.2 Migration as an Exit Option

The other major response among medical doctors has been migration, which has worsened significantly in recent years. The number of physicians leaving Iran to work in richer countries far exceeds the number of incoming doctors. Key statistics include:[10]

- The average number of new medical students entering Iranian universities annually is approximately 5,000.
- In 2022 alone, around 6,500 physicians emigrated, including 2,300 specialists.
- The annual outflow of doctors surpasses incoming medical students by approximately 30%.

The scale of this migration underscores the severity of doctors' dissatisfaction with their economic situation and the overall working conditions in the healthcare sector. The combination of domestic economic pressures and the allure of better opportunities abroad has fueled this trend.

8 Conclusion

As the data clearly demonstrates, if the current trend of low wages for medical doctors relative to the inflation rate continues, Iran is likely to face a severe shortage of doctors in the coming years. The economic and political situation has already led to significant migration among both medical doctors and dentists.

While migration is a concern for both professions, the situation for medical doctors is notably more severe. A general medical doctor who does not engage in aesthetic services earns, on average, between $\frac{1}{8}$ and $\frac{1}{3}$ of the income of a general dentist of the same age. This stark disparity in earnings highlights the urgency of addressing the wage policies and improving economic conditions for medical professionals in Iran.

The government should refrain from imposing low prices for medical doctors, particularly in the private sector, and should return the authority to set prices to the Medical Council of Iran.

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