What determines earnings of self-employed physicians in Austria? Evidence from quantile regressions using linked tax records

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Highlights

- There is a shortage of outpatient physicians holding a contract with SHI in Austria
- Speciality, age, sex and region are important determinants of income
- Contracted physicians earn much more than non-contracted physicians
- Financial incentives alone may thus not effectively address recruitment challenges

What determines earnings of self-employed physicians in Austria? Evidence from quantile regressions using linked tax records

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CS: methodology, validation, formal analysis, investigation, data curation, writing – original draft, writing – review and editing, project administration

MR: conceptualization, methodology, validation, formal analysis, investigation, data curation, writing – original draft, writing – review and editing

TC: conceptualization, methodology, validation, investigation, writing – original draft, writing – review and editing, supervision, project administration, funding acquisition

Abstract

Background: Shortage of healthcare workers is a growing challenge and financial remuneration may influence recruitment efforts. In Austria, self-employed physicians can either work as contracted or non-contracted physicians. While non-contracted practices are expanding, sickness funds face increasing difficulties in recruiting contracted physicians.

Objective: To analyze physician income, its key determinants and whether financial incentives could help SHI funds address recruitment challenges.

Methods: We used data from the Federal Ministry of Finance and the Federation of Social Insurances to derive descriptive statistics for self-employed physicians. In-depth data on contracted physicians enabled us to explore determinants of their income using quantile regressions.

Results: In 2022, contracted GPs had median annual earnings of EUR 191,649 before taxes, while contracted specialists earned EUR 210,988. Among GPs, an additional consultation was associated with an increase in earnings of EUR 11.70. Being a male GP corresponded with higher earnings of EUR 6,763 compared to female GPs. For specialists, each additional consultation increased earnings by EUR 27.94, and being female was associated with decreased earnings of EUR 13,413. Due to missing data on key variables, regression analysis was not possible for non-contracted physicians, but their median income was EUR 100,849

Conclusion: Given higher earnings of contracted physicians compared to their non-contracted peers, it seems unlikely that increased financial incentives would help SHI funds in recruiting contracted physicians.

Keywords: Physician earnings, physician shortage, GPs, specialists, health workforce, remuneration, Austria

Research in context:

What is already known about the topic?

Income is considered a key factor in addressing shortages of physicians in the outpatient sector, prevalent throughout Europe. While the literature shows that factors such as age, sex, speciality, geography and practice type play a role, the extent to which they do so varies depending on the respective healthcare system. Moreover, physicians often have multiple sources of income.

What does this study add to the literature?

We use a unique dataset that links information from social insurance with data from the Ministry of Finance that encompasses all forms of earnings of Austrian outpatient physicians. Using this pseudonymised data, we perform regressions that include the activity level of physicians, and we can also distinguish between those working with and without a contract with social health insurance.

What are the policy implications?

Our findings reveal significant differences between specialisations and regions at comparable activity levels that should be considered in fee negotiations. Nevertheless, we observe that physicians with a contract generate considerable income, particularly compared to their non-contracted counterparts. This finding implies that for many physicians in Austria, increasing the fees might not be a strong incentive to apply for a contract.

Background

Health systems across Europe have been struggling with a shortage or at least misallocation of health workers, including physicians [1,2]. The debate around this has been ongoing for quite some time, but was strongly reinforced by the COVID-19 pandemic.

Austria, seemingly, does not have a shortage of physicians compared to other European countries. With 5.5 physicians per 1,000 population, Austria had the highest physician density in the EU in 2023 [3]. A peculiarity of the Austrian health system is that specialists do not only practise in hospitals but also in the outpatient sector, which enables low-threshold access to both primary and specialized care without gatekeeping. Looking more closely, however, there are several challenges regarding the distribution of physicians:

- In some specialties, sectors, and geographical locations, there are indeed shortages. In 2023, approx. 3% of positions for contracted physicians remained vacant, predominantly in rural areas [4]. Collective contracts are negotiated in a decentralised manner, resulting in different fee schedules across federal states that contribute to disparities in attractiveness of working in certain regions.
- The proportion of GPs decreased from 16% in 2010 to 13% in 2024 and is among the lowest in the EU [5]. A high workload and bureaucratic burden, the weak role of primary care in the Austrian system, lack of prestige compared to specialists, and inadequate remuneration have been identified as demotivational factors to work in primary care [6].
- The increase in physician density is predominantly attributable to an increasing number of non-contracted physicians (so-called *Wahlärzte*). Their number increased by 40% between 2009 and 2019, while the number of contracted physicians has stagnated or even decreased in some specialties[4,7–9].

These non-contracted physicians are another specific feature of the Austrian health system mainly due to its intent to provide benefits in kind [8]. Self-employed physicians in the public sector work under contracts that are collectively negotiated by SHI funds and the Chamber of Physicians. These contracts vary to some degree between SHI funds. When taking up a contracted position, physicians agree to specific rules, a payment scheme combining fee-for-service remuneration and contact capitations, as well as electronic data exchange. In turn, the Chamber of Physicians and SHI agree to limit the number of contracted positions. Many physicians, both GPs and specialists, thus need to practice without an SHI contract. Some also choose to opt out of contracting to gain greater autonomy over their fee structures, working hours, and patient selection, regardless of insurance status. A significant share of non-contracted physicians concurrently engage in salaried hospital employment, allowing them to treat their private patients in their resident hospital and thereby earning extra income from special fees [10]. Unlike contracted physicians, non-contracted physicians operate exclusively on a fee-for-service basis and have complete freedom in setting their rates. Waiting times are usually shorter with non-contracted physicians, but patients can claim only partial reimbursement (up to 80% of the SHI tariff) from their public insurance. Non-contracted physicians often set their fees substantially above the rates reimbursed by insurance funds, which results in high out-of-pocket payments for patients and concerns regarding equitable access to health services [4,11]. At the same time, the reimbursement system makes services provided by non-contracted physicians less costly for SHI funds. As a result, the latter have been cautious about creating new contracted positions [11].

Policymakers in Austria have attempted to tackle the problem of physician misallocation using various measures in recent years. In the healthcare reform 2024-2028, hundreds of additional contracted positions are planned, with a specific focus on primary care. The

reform foresees a standardisation and modernisation of the collective contract, and an obligation of non-contracted physicians to participate in the use of electronic health records. The Austrian Health Insurance Fund has launched a professional support package allowing contracted physicians to outsource organisational and managerial tasks, and awards scholarships to medical students who commit themselves to working as contracted physicians in certain specialties and regions.[4,12]

An obvious factor that is often discussed in the context of physician shortages is financial remuneration. The European Federation of Salaried Doctors acknowledges that 'remuneration of doctors plays a crucial role in the appeal of the medical profession, influencing career decisions and migration patterns among physicians' [13]. The existing international literature provides a body of evidence on determinants of physician earnings, including sex [14–18], age [19], specialty [20], and practice characteristics like geographical location or practice type [18]. Findings on physician earnings, however, are difficult to compare across countries, as institutional specifics of health systems play a major role in remuneration patterns.

In the public debate in Austria, it is sometimes suggested that a major motivation for physicians to work without an SHI contract was the non-contracted status being financially more attractive. However, as health worker payment accounts for a substantial fraction of total healthcare expenditure [21], potential increases in payments for contracted physicians would put further pressure on already strained public budgets. It is thus essential to pose the question whether a change in the dimensions and structure of financial remuneration would be effective in helping to optimise physician allocation.

The research presented in this article aims to investigate earnings of different types of self-employed physicians in Austria, and to identify key determinants of these earnings. We used data from tax records linked to a dataset containing individual-level information on physicians. An income variable was defined that covers various types of relevant incomes (in particular, income from outpatient practice, income from hospital employment, and income from physician dispensing) and allows for comparisons across settings. The data were comprehensively investigated using descriptive and regression analyses. We find that contracted physicians tend to achieve considerably higher incomes than their non-contracted peers, suggesting that policy options apart from remuneration should be further explored to make contracted positions more attractive. To our knowledge, this is the first large-scale analysis of physician earnings and their determinants for Austria.

Methods

This study utilizes data from the Federal Ministry of Finance (*BMF*, *Bundesministerium für Finanzen*) and the Federation of Social Security Institutions (*DV*, *Dachverband der Sozialversicherungen*), the umbrella organisation of statutory health insurance institutions in Austria.

The DV data contains individual-level information on self-employed physicians registered with the DV, both contracted and non-contracted. We define as contracted physicians only those who hold a contract with all SHI funds, while non-contracted physicians are hold none. Both groups may concurrently do salaried work, but this is mostly relevant for non-contracted physicians working in hospitals. The number of consultations is only available for contracted physicians who are working in a solo practice. Other variables from the DV include age, sex,

specialty, degree of urbanization, state and right to dispense pharmaceuticals. The latter is only granted to GPs in intermediate or rural regions where no community pharmacy exists in the municipality or within six kilometres of the surgery (*§ 29 ApoG*). For non-contracted physicians, the DV database includes only limited information. In particular, data on the specialty was unavailable for the majority of non-contracted physicians.

The BMF data provides detailed information on different income streams. Importantly, it includes data on wages, earnings before tax and the relevant ÖNACE 2008 (Austrian version of the NACE) code [22]. The ÖNACE code was used to identify income streams relevant to the physician occupation, while excluding other sources such as, e.g., rental income. The following ÖNACE codes were deemed relevant:

- G 47.7 Retail sale of other goods
- Q 86.1 Hospital activities
- Q 86.2 Medical and dental practice activities
- Q 86.9 Other human health activities

We adopted this definition to minimize inclusion of non-medical income while ensuring comprehensive coverage of core medical activities. Income from these activities was aggregated to calculate self-employed income. Total income was defined as the sum of self-employed income and wages, where:

- Self-employed income is defined as earnings before tax, with social security contributions and mandatory medical chamber contributions already deducted.
- Wages are defined as gross wages minus social security contributions, mandatory medical chamber contributions, and individual tax allowances (e.g., commuting allowance), representing the wage tax assessment basis (*Lohnsteuerbemessungsgrundlage*).

We used these measures, which are neither gross nor net, to ensure comparability between self-employed income and wages. Negative values were included to capture all physicians, including those with losses from investments or low patient volumes.

Capital income of physicians owning a corporation or shares of a corporation are not included. The respective data was not provided by the BMF as it would not allow for a distinction between occupationally relevant capital income and capital income related to other sources. This is particularly relevant for radiologists, laboratory specialists, pathologists or other physicians who own large institutes. For those physicians, yearly earnings are therefore underestimated, as they may receive not only a salary but also shareholder income.

Conditional quantile regression (at the median) was performed for contracted GPs (models GP1 to GP5) and specialists (models SP1 to SP6), using total income in 2022 as the dependent variable. Regressors included the number of consultations (GP1, SP1), age, age², sex (GP2, SP2), right to dispense pharmaceuticals (GPs only), degree of urbanization (GP3, SP3) and state (GP4, SP4). For GPs, we also included a model (GP5) with an interaction term between the right to dispense and degree of urbanization to test whether the dispensing income premium varies across urbanization levels. For specialists, we also accounted for specialty (SP5), along with an interaction term between specialty and number of consultations to control for varying effects of consultations across specialties (SP6). This is particularly relevant given that certain specialties, such as laboratory/pathology and physical medicine, are outliers and the number of consultations varies substantially across specialties. For non-contracted physicians, only descriptive results are provided as data on

key variables (number of consultations, specialty) are incomplete. Quantile regression was chosen to account for the heavy outliers present in the data.

Results

Table 1 shows descriptive statistics of contracted GPs and specialists in 2022. The dataset includes 3,489 GPs and 5,330 specialists. GPs had a median income of EUR 191,649, were on average 53.23 years old, and had a median of 18,407 consultations per year. Their mean income was EUR 221,687, composed of EUR 212,150 from self-employed income and EUR 9,536 from wages. The majority (54%) of GPs were male, 18% had the right to dispense, and 47% practised in rural areas.

Specialists had a higher median income of EUR 210,988 but performed fewer median consultations (5,309). Their mean income of EUR 276,749 comprised EUR 264,708 from self-employed income and EUR 12,041 from wages, with substantial variation across specialties. They were slightly older, with a mean age of 54.27 years, 62% were male, and 52% practised in urban areas.

Table 1: Descriptive statistics of contracted GPs and specialists

	GPs				Specialists			
Variable	n	**Median**	**Mean**	**SD**	**n**	**Median**	**Mean**	**SD**
Total income	3,489	191,649	221,687	150,583	5,330	210,988	276,749	327,580
Self-employed income	3,489	185,422	212,150	149,648	5,330	197,975	264,708	327,526
Wages [a]	3,489	0	9,536	19,408	5,330	0	12,041	27,065
Wages [b]	1,266	20,810	26,282	24,457	1,770	34,252	36,260	36,442
Number of consultations	3,014	18,407	19,103	8,783	4,596	5,309	6,625	9,198
Age	3,489	54	53.23	9.50	5,330	57	54.27	9.99
Male	3,489	1	0.54	0.50	5,330	1	0.62	0.48
Right to dispense	3,489	0	0.18	0.38				
Degree of urbanization	3,366				4,972			
Urban	1,171		0.35	0.48	2,571		0.52	0.50
Intermediate	605		0.18	0.38	700		0.14	0.35
Rural	1,590		0.47	0.50	1,701		0.34	0.47
State	3,444	**Per 100 000 population**	**Mean**	**SD**	**5,189**	**Per 100 000 population**	**Mean**	**SD**
Burgenland	125	42	0.04	0.19	148	50	0.03	0.17
Carinthia	235	42	0.07	0.25	359	64	0.07	0.25
Lower Austria	682	40	0.20	0.40	935	55	0.18	0.38
Upper Austria	641	43	0.19	0.39	780	52	0.15	0.36
Salzburg	209	37	0.06	0.24	319	57	0.06	0.24
Styria	516	41	0.15	0.36	667	53	0.13	0.33
Tyrol	305	40	0.09	0.28	425	56	0.08	0.27
Vorarlberg	154	38	0.04	0.21	270	67	0.05	0.22
Vienna	577	30	0.17	0.37	1,286	67	0.25	0.43
Specialty	**3,489**	**Median income**	**Mean income**	**SD**	**5,322**	**Median income**	**Mean income**	**SD**
General practice	3,489	191,649	221,687	150,583				
Ophthalmology					334	304,924	346,517	249,295
Surgery					118	242,490	298,044	266,129
Dermatology					208	209,799	252,626	182,412
Gynecology					356	178,057	199,943	127,696
ENT					234	244,269	296,358	204,650
Internal medicine					369	306,510	357,993	279,998
Pediatrics					238	198,897	239,140	174,825
Laboratory/Pathology					34	1,197,092	1,841,088	2,082,959
Pulmonology					145	259,584	275,244	175,774
Neurology/Psychiatry					278	202,404	238,188	147,768
Orthopedics					241	285,737	349,531	281,559
Physical medicine					20	259,121	361,433	286,394
Radiology					203	385,852	526,855	625,587
Urology					160	290,236	317,700	172,433
Dental medicine					2,384	166,109	218,224	216,848

Notes: Total income = self-employed income + wages. All physicians earn self-employed income, while only some also receive wages.
[a] Includes zeros for physicians without wages (aligns with total income; rounding differences may occur).
[b] Restricted to physicians who receive wages

Table 2 shows summary statistics of non-contracted physicians. Approximately 25% were only self-employed and 75% also had a salaried position. The former were younger (mean age 50 vs. 56 years) and more often female (52% vs. 41%). Both groups had similar mean income (EUR 133,551 vs. EUR 132,492), but the median income of those exclusively self-employed was lower (EUR 86,491 vs. EUR 104,019). Overall, median income reached EUR 100,849 (mean: EUR 132,753), which was considerably lower than that of contracted physicians. Specialty information was unavailable for the majority of non-contracted physicians (61%).

Table 2: Descriptive statistics of non-contracted physicians

		Exclusively self-employed				**Self-employed and salaried**		
Variable	n	**Median**	**Mean**	**SD**	**n**	**Median**	**Mean**	**SD**
Total income	2,707	86,491	133,551	155,142	8,294	104,019	132,492	131,977
Self-employed income	2,707	86,491	133,551	155,142	8,294	27,096	61,651	121,376
Wages	0	0	0	0	8,294	67,779	70,841	50,847
Age	2,707	50	50.29	8.44	8,294	57	55.92	11,77
Male	2,707	0	0.48	0.50	8,294	1	0.59	0.49
Degree of urbanization	2,315				7,371			
Urban	1,334		0.58	0.49	4,836		0.66	0.48
Intermediate	369		0.16	0.37	774		0.11	0.31
Rural	612		0.26	0.44	1,761		0.24	0.43
State	2,653	**Per 100 000 population**	**Mean**	**SD**	8,138	**Per 100 000 population**	**Mean**	**SD**
Burgenland	54	18	0.02	0.14	187	63	0.02	0.15
Carinthia	153	27	0.06	0.23	470	83	0.06	0.23
Lower Austria	317	19	0.12	0.32	1,338	79	0.16	0.37
Upper Austria	420	28	0.16	0.37	1,179	78	0.14	0.35
Salzburg	198	35	0.07	0.26	461	82	0.06	0.23
Styria	307	25	0.12	0.32	872	70	0.11	0.31
Tyrol	384	50	0.14	0.35	442	58	0.05	0.23
Vorarlberg	111	28	0.04	0.20	213	53	0.03	0.16
Vienna	513	27	0.19	0.40	2,559	132	0.31	0.46
Not assignable	196	18	0.07	0.26	417	63	0.05	0.22
Specialty	2,707		**Mean**	**SD**	8,294		**Mean**	**SD**
General practice	530		0.20	0.40	1,102		0.13	0.34
Ophthalmology	61		0.02	0.15	68		0.01	0.09
Surgery	69		0.03	0.16	284		0.03	0.18
Dermatology	71		0.03	0.16	68		0.01	0.09
Gynecology	129		0.05	0.21	242		0.03	0.17
ENT	18		0.01	0.08	51		0.01	0.08
Internal medicine	127		0.05	0.21	454		0.05	0.23
Pediatrics	34		0.01	0.11	82		0.01	0.10
Laboratory/Pathology	0				1		0.00	0.01
Pulmonology	5		0.00	0.04	17		0.00	0.05
Neurology/Psychiatry	85		0.03	0.17	214		0.03	0.16
Orthopedics	52		0.02	0.14	151		0.02	0.13
Physical medicine	5		0.00	0.04	7		0.00	0.03
Radiology	8		0.00	0.05	12		0.00	0.04
Urology	18		0.01	0.08	55		0.01	0.08
Dental medicine	109		0.04	0.20	86		0.01	0.10
Not available/other	1,386		0.51	0.50	5,400		0.65	0.48

Notes: Total income = self-employed income + wages. Exclusively self-employed physicians do not receive wages.

Table 3 shows the results of the quantile regression on GPs' income at the median, presenting five models (GP1-GP5) with a different set of control variables. Model GP4 is the preferred specification as it includes the full set of relevant controls without adding unnecessary complexity. Models GP1-GP3 show robustness of estimates as controls are

added, while model GP5 tests whether the dispensing income premium varies by degree of urbanization. The non-significant interaction in GP5 and unchanged model fit support GP4 as the main specification.

Consultations are significantly associated (p<0.01) with income, consistent with the fee-for-service component of outpatient physician renumeration. In the preferred model (GP4), each additional consultation is associated with an increase in annual income of EUR 11.69 (95% CI: 11.34-12.04), all else being equal. Age and age squared both exhibit significant (p<0.01) positive coefficients, suggesting a non-linear relationship between age and income. Male GPs earn significantly more than female GPs, with the effect decreasing from EUR 16,675 (95% CI: 9,490-23,860) in GP2 decreasing to EUR 6,763 (95% CI: 492-13,035) in GP4. The right to dispense pharmaceuticals is associated with an income increase of EUR 90,478 in GP4 (95% CI: 82,514-98,442).

The effect of the degree of urbanization becomes insignificant in GP4 when regional variables are introduced. Significant income differences are observed across Austrian states. Practice location in Vorarlberg and Vienna is associated with an increase in income of EUR 76,820 (95% CI: 61,314-92,327) and EUR 31,359 (95% CI: 19,677-43,042), respectively, compared to GPs in Lower Austria.

Table 3: Quantile regression estimates on income (GPs) at the median, models GP1-GP5

Variable	GP1	GP2	GP3	GP4	GP5
Number of consultations	10.84***	10.81***	11.18***	11.69***	11.69***
Age		1,347***	1,268***	1,578***	1,582***
Age squared		116.7***	107.5***	90.79***	92.48***
Male		16,675***	10,911***	6,763**	6,645**
Right to dispense			88,088***	90,478***	91,168***
Intermediate urbanity (ref = urban)			-9,737**	-6,862	-6,516
Rural			-12,495***	3,341	5,751
Burgenland (ref = Lower Austria)				-8,144	-7,802
Carinthia				24,792***	25,104***
Upper Austria				25,071***	25,033***
Salzburg				23,650***	23,547***
Styria				-15,946***	-15,970***
Tyrol				29,702***	29,772***
Vorarlberg				76,820***	78,630***
Vienna				31,359***	31,585***
Right to dispense × intermediate urbanity (ref = rural)					2,564
Constant	553.8	-16,596***	-27,737***	-57,098***	-60,040***
Observations	3,014	3,014	2,897	2,897	2,897
Pseudo R-squared	0.289	0.306	0.357	0.387	0.387

*** p<0.01, ** p<0.05, * p<0.1

Table 4 presents the regression results on specialists' income across six models (SP1–SP6) with an increasing set of control variables. The additional variables compared to the GP-models include specialty (SP5) and an interaction term between specialty and number of consultations (SP6).

In model SP5, most specialties exhibit a significant effect on income, with laboratory/pathology (EUR -894,225, 95% CI: -1,041,904 to -746,547) and physical medicine (EUR -492,335, 95% CI: -571,269 to -413,401) having notably high negative effect sizes

compared to the median gynecologist. This is partly due to the high number of consultations in those specialties (medians 97,371, 28,802 and 6,165, respectively). The specialty with the highest positive effect size is surgery (EUR 109,482, 95% CI: 71,144-147,821) – a specialty with a relatively low number of median consultations (4,727). Once interaction terms are introduced (SP6) the significance of most specialties vanishes, and most interaction terms become significant instead. For example, pulmonologists gain an additional EUR 14.80 per consultation compared to gynecologists (95% CI: 4.85-24.76), while laboratory/pathology specialists experience a decrease of EUR 5.59 per consultation (95% CI: -10.93 to -0.24).

Age and age squared show inconsistent significance across models, though both become significant in SP6 (95% CI: 287-1,247 and 95% CI: 24-106, respectively), suggesting a similar relationship between age and income for specialists and GPs. Male specialists consistently earn significantly more than females , with the effect decreasing from EUR 39,222 (95% CI: 29,290-49,155) in SP2 to EUR 13,413 (95% CI: 4,457-22,370) in SP6. Regional disparities in income are observed, with specialists in Vorarlberg earning the highest (EUR 64,103 more than in Lower Austria, 95% CI: 43,216-84,991).

Table 4: Quantile regression estimates on income (specialists) at the median, models M1-M6

Variable	SP1	SP2	SP3	SP4	SP5	SP6
Number of consultations	24.24***	23.65***	23.48***	23.44***	30.03***	27.94***
Age		-236.1	-279.3	-27.71	309.3	767.3***
Age squared		35.72	22.95	24.24	57.47**	65.31***
Male		39,222***	37,732***	34,595***	20,001***	13,413***
Intermediate urbanity (ref = urban)			18,295***	17,571**	8,435	4,103
Rural			3,337	7,951	3,367	-1,539
Burgenland (ref = Lower Austria)				-1,401	3,585	-8,965
Carinthia				27,845**	21,143*	17,201*
Upper Austria				35,110***	32,745***	30,624***
Salzburg				6,032	6,319	4,567
Styria				-1,546	-5,166	-4,464
Tyrol				18,855*	17,758*	22,475**
Vorarlberg				45,132***	59,078***	64,103***
Vienna				9,200	14,373	21,283***
Ophthalmology (ref = Gynecology)					65,323***	-16,615
Surgery					109,482***	52,801
Dermatology					-81,867***	-44,761
ENT					48,056***	-19,799
Internal medicine					83,912***	44,907
Pediatrics					-75,807***	-17,374
Laboratory/Pathology					-894,225***	273,354***
Pulmonology					70,870***	-15,135
Neurology/Psychiatry					78,345***	75,348***
Orthopedics					-3,423	-8,961
Physical medicine					-492,335***	-386,631***
Radiology					47,375**	-71,427
Urology					66,964***	586.7
Dental medicine					64,643***	-1,919
Ophthalmology × consultations (ref = Gynecology)						11.89***
Surgery × consultations						9.370*
Dermatology × consultations						-2.818
ENT × consultations						10.53***
Internal medicine × consultations						6.835**

Pediatrics × consultations						-5.189
Laboratory/Pathology × consultations						-5.587**
Pulmonology × consultations						14.80***
Neurology/Psychiatry × consultations						0.0928
Orthopedics × consultations						1.262
Physical medicine × consultations						-3.850
Radiology × consultations						11.17***
Urology × consultations						9.839**
Dental medicine × consultations						17.14***
Constant	66,118***	45,684***	43,234***	30,814***	-45,785***	-30,402
Observations	4,596	4,596	4,263	4,263	4,263	4,263

*** p<0.01, ** p<0.05, * p<0.1

Discussion

The research presented in this article investigates the earnings of self-employed physicians in Austria in 2022. An obvious question of interest is how the income of this group compares to other occupations or the general population. In 2021, a person who predominantly worked self-employed earned a median annual income before taxes of approx. €26,600. The median income of predominantly self-employed lawyers, a group that may be comparable to physicians in some respects, was approx. €82,100 [23]. With median total incomes of EUR 191,649 and EUR 210,988, respectively, self-employed contracted GPs and specialists are thus able to generate very high incomes in relation to other occupational groups in Austria.

A comparison with hospital physicians presents methodological challenges. We lack comprehensive data on physicians working exclusively in hospitals. Official salary schedules underestimate take-home pay due to additional payments such as night shifts, overtime and weekend supplements. In a previous study [24], we obtained data on Viennese hospital physicians and employed the same methodology to find that specialists employed in hospitals had median earnings of EUR 77,693. This compares to median earnings of EUR 155,984 for contracted specialists and EUR 75,524 for non-contracted physicians in 2015. However, subsequent changes to working hours mandated by a legal reform led to a substantial restructuring of wages, preventing straightforward extrapolation to 2022.

To provide a comparison with Germany, we examined data from the Zi-PP panel, an annual survey of approximately 3,300 self-employed physicians [25]. Median self-employed GP income after social security deductions was EUR 180,040, which is roughly comparable to the self-employed income for Austrian GPs of EUR 185,422. Monthly net earnings after taxes were EUR 9,176 in Germany and EUR 8,868 in Austria, though GP training is longer in Germany. Thus, according to this illustrative calculation, net earnings of Austrian and German GPs are broadly on a similar level, although actual take-home income may vary substantially according to individual circumstances.

Finally, it is worth considering the temporal development of earnings, particularly given reports of England's doctors' real pay declines of up to 25% since 2008 [26,27] and repeated strikes over pay. In our earlier study [24], we derived median earnings of EUR 129,941 for contracted GPs, EUR 155,984 for contracted specialists and EUR 75,524 for non-contracted physicians in 2015. Thus, nominal median earnings increased by 47%, 35% and 34%, respectively, exceeding cumulative inflation (21%) and median wage growth (20%) [28].

Our analysis further reveals significant factors influencing the income of both GPs and specialists in Austria. For GPs, these were number of consultations, age, sex, region, and the right to dispense pharmaceuticals. Each additional consultation was associated with a notable increase in income, as is expected given the fee-for-service component of outpatient physician remuneration. The relatively high income level of GPs in Vorarlberg may reflect regional labour market characteristics as the state competes with neighbouring Switzerland's higher pay levels and has introduced measures to curb physician outflow [29].

Male GPs earned significantly more than female GPs. Although the discrepancy decreased as more control variables were introduced, a substantial disparity remains. The gap may partly reflect that female physicians spend more time per consultation [30,31] leading to fewer consultations and lower earnings. However, consultation duration or working hours are not recorded, preventing us from determining whether the difference in consultation volume was due to longer consultation times or reduced working hours. Overall, our findings align well with results from the literature [15,16,18].

Gender differences are also observed in the composition of contracted vs. non-contracted physicians. The share of females is higher among non-contracted than contracted physicians (43.5% vs 40.8%) with generally higher shares among younger (<50 years old) physicians (53.4% vs. 50.7%). The difference is more pronounced among exclusively self-employed physicians, where women constitute 52.5% compared to 40.5% among self-employed and salaried physicians. Again, the female share is higher among younger physicians (60.7% and 50.0%). While multiple factors influence the choice to become a non-contracted physician, autonomy over consultation duration is a key factor [32], which may be particularly valued by women.

The effects of both age and age squared on income are positive, while existing research [15,33] would typically suggest a negative effect of age squared to indicate a plateauing or decline in income at older ages. This observation may be explained by a few peculiarities of the medical profession reflected in our data. First, well-earning physicians may continue working longer while others may retire earlier. Second, business factors may contribute to higher late-career earnings through declining investments, improved operational efficiency and billing practices. Third, physicians who are about to retire receive a compensation for practice equipment and facilities from the person taking over. Finally, physicians over 65 receive pension payments included in total income.

For specialists, income was similarly influenced by the number of consultations and individual characteristics such as age, sex and location. However, compared to GPs, the effect of sex was larger while that of age was less pronounced. Notably, female-dominated specialties, such as dermatology (50%), tend to pay less than male-dominated specialties, such as radiology (78%), (appendix Figure S1). These results are consistent with existing literature highlighting that specialists earn more than GPs and that income disparities are determined by specialties [18,20,34,35]. An exception in our data are dentists, whose median earnings are approx. EUR 26,000 lower than those of GPs. One possible explanation is that dental care is particularly vulnerable to informal payments, as its out-of-pocket share is relatively high with 55% compared to 17% for outpatient care [36].

The income premium for dispensing phyicians is substantial, amounting to approximately EUR 90,000 across different model specifications. Model GP5 tested whether this income premium varies by degree of urbanization through an interaction term but found no significant effect. There are instances of GPs strategically relocating their practices out of town centres to meet the required 6km distance to the nearest pharmacy and thus gain dispensing rights [37], thereby impairing access to the practice. Additionally, research indicates that dispensing physicians tend to prescribe more antibiotics than their peers, suggesting that financial incentives may influence prescribing patterns [38].

Although no regression analyses were conducted for non-contracted physicians, several insights can be drawn from the descriptive results, particularly regarding the challenges in recruiting contracted physicians. Non-contracted physicians achieved median earnings of EUR 100,849, substantially lower than those of contracted physicians (EUR 201,306). However, our data do not capture working hours, and it is possible that non-contracted physicians' hourly earnings exceed those of contracted physicians. Thus, lower annual income levels may partially reflect preferences for reduced working hours. Despite the lower earning potential, the number of non-contracted physicians has exceeded that of contracted physicians since 2011 [8]. Thus, financial incentives alone are unlikely to resolve recruitment difficulties, as are efforts to increase the number of medical graduates. Austria already has the highest physician density in the EU [3], and expanding training capacity would primarily benefit the non-contracted sector, indicating that the challenge is one of physician

misallocation rather than physician shortage. Instead, recruitment challenges may reflect changing preferences among (younger) physicians, who increasingly prioritise collaboration and regular working hours. In contrast, the SHI system remains largely centered around the traditional solo-practice model, where physicians work long hours and cope with high patient volumes, but earn well. Non-contracted practices better accommodate these changing preferences, as they allow for greater flexibility in setting opening hours and consultation fees. This is in line with findings on inelastic wages of physicians and research emphasizing the importance of non-pecuniary factors like working conditions, job satisfaction and intrinsic motivation [39,40].

High flexibility may be particularly relevant for female physicians, who are more likely to choose non-contracted practices. The ability to set their own fees may enable them to align consultation fees with longer consultation times which is not possible under a contracted status. While SHI funds have made efforts to address these shifting preferences through the introduction of primary care and specialist units and job sharing, further reforms are needed to make contracted practice more attractive. The standardisation and modernisation of the collective contract, which is planned in the current healthcare reform, would be an opportunity to tackle these issues.

While SHI funds have economic incentives to maintain and expand the non-contracted system, as they only reimburse 80% of the contracted fee, policy responses are shaped by the corporatist governance structure of Austrian social insurance. Within the social insurance system, the social democratic faction has been more critical of the non-contracted sector, advocating for reform or abolishment while the conservative faction is in favor of keeping the status quo [41–43].

Nonetheless, while financial incentives may not play a decisive role in choosing between contracted and non-contracted practice, they can still influence the choice of specialty, given the significant earnings differences across specialties. The lower earnings of GPs may be partly justifiable by their shorter training period, but it remains important to incentivize specialties where recruiting contracted physicians has proven particularly challenging. Moreover, it is worth considering which income disparities between specialties are acceptable and which may be excessive. While the high earnings of technical specialties can, to some extent, be attributed to greater capital requirements, the substantial income gap between, e.g., gynecology and orthopedics raises the question of whether capital costs alone fully justify these differences. In response to such imbalances, SHI funds have already begun incorporating these considerations into their annual adjustments of fixed rates. For example, while the average increase of rates between 2020 and 2024 across all specialties was 3.5%, laboratory/pathology saw a below-average increase of 1.9%, whereas it was 4.2% in pediatrics and 4.0% in gynecology. While this is not a complete turnaround, it suggests that SHI and the chamber of physicians recognize the gap.

Strengths and limitations

A key strength of this study is the comprehensive dataset covering almost all self-employed physicians in Austria. The data is derived from factual tax returns, ensuring a high degree of precision in income reporting compared to self-reported earnings. This rich dataset allows for robust insights into income patterns of self-employed physicians.

However, several limitations must be acknowledged. Capital income is not included in our data. Physicians who are shareholders in incorporated practices receive dividends as capital income, taxed separately from regular income in Austria’s tax system. This particularly affects specialties with a high proportion of institutes or incorporated practices, such as

radiology, laboratory/pathology and physical medicine. As a result, earnings in these specialties are underestimated.

Consultation data is only available for solo-practicing contracted physicians. While most physicians work solo (86% of GPs and specialists), two-thirds of laboratory/pathology and radiology physicians work in group practices. Most other specialties range between 5% and 14%. Thus, consultation-based estimates may be less representative for pathologists and radiologists.

Our data only fully covers physicians contracted with SHI funds. While our dataset includes income data for non-contracted physicians, information on physician specialty is only available for 39% of them and consultation data is not available at all. As a result, we were unable to comprehensively analyse earning patterns for non-contracted physicians.

Finally, the dataset does not include working hours, as it only covers self-employed physicians. However, SHI regulations mandate a minimum of 20 opening hours per week for contracted physicians. While consultations do not directly measure workload, their number (at least within a specialty) can serve as an imperfect proxy for workload.

Conclusion

We used comprehensive tax return data to gain insights on earnings of self-employed physicians in Austria. Our findings demonstrate that contracted physicians earn substantially more than non-contracted physicians, with median annual earnings of EUR 191,649 for contracted GPs and EUR 210,988 for contracted specialists, compared to EUR 100,849 for non-contracted physicians. Furthermore, earnings increased substantially between 2015 and 2022, outpacing inflation. Despite markedly higher real median earnings making a contracted status financially attractive, recruitment challenges persist, suggesting that financial incentives alone are insufficient to overcome the shortage of contracted physicians.

These findings have important implications for physician workforce policy in Austria. While some reforms have been implemented to address changing physician preferences, more comprehensive approaches are needed.

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