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Article

Is There a Bright Side to the China Syndrome? Rising Export Opportunities and Life Satisfaction in China

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Export growth affects individuals through numerous and contradictory channels. In China, the development of exports has promoted economic development and income growth, but it has also disrupted social structures and work environments. This paper explores the overall effect of exports on perceived well-being by combining responses from a large longitudinal survey covering over 45,000 Chinese with a shift-share measure of local export opportunities. Results show that individuals' perceived life satisfaction increases significantly in prefectures that benefited from greater export opportunities, despite a negative effect on self-reported health. The positive well-being gains go beyond a simple income effect. These non-monetary gains are related to the individuals' professional life: export-related well-being gains are stronger for working-age individuals (especially men and low-skilled workers), are largest for workers in the manufacturing sector (which produces the vast majority of China's exports), and are found when the satisfaction indicator focuses on work but not on other aspects of daily life.

JEL classification: F61, F66, I31, J28

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1. Introduction

A growing literature highlights the multiple and contradictory impacts of export growth on individuals. While exports tend to improve economic well-being, notably because they generate new employment opportunities and wage increases, they can also be harmful, in particular to health because of the deterioration in environmental quality and working conditions. Through these different channels, the expansion of exporting activities in a given location is likely to significantly affect the quality of life experienced by its residents.

This complex picture applies particularly to the case of China, whose exports have risen sharply from less than 2 percent in 1990 to 15 percent of the world total in the early 2020s. China's export development led to a rise in the number of jobs and hours worked in the manufacturing sector (Ouyang and Yuan 2019; Facchini et al. 2019), which has contributed to higher incomes and reduced malnutrition and improved health (Feng, Xie, and Zhang 2021). However, due to the increased concentration of pollution

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it generates, industrialization linked to export growth has had a negative effect on health, increasing mortality, especially among children (Bombardini et al. 2020). The development of export activities in China has also profoundly altered lifestyles and affected socioeconomic hierarchies through its redistributive effects. The structural transformation it has brought about has led individuals to change their location, family life, and human capital investment strategies (Li et al. 2019).

Understanding the perceived benefits and costs of export growth is an important political issue. China is in the process of rebalancing its economy from rapid export-led development to more moderate growth focused on the domestic market. In this context, the Chinese authorities are bending the social contract by aiming at the happiness of the Chinese people rather than their monetary enrichment. A key factor in determining whether this transition will be successful is the extent to which the change in exports affects the well-being of the population.

This work examines the impact of local exports on the well-being of the Chinese population using subjective life satisfaction data for approximately 45,000 people in 125 Chinese prefectures between 2010 and 2016 from the Chinese Family Panel Surveys.[1] The use of data on subjective well-being makes it possible to account for the way in which exports modify the overall satisfaction that individuals have with their lives, after weighing the various—possibly opposing—impacts (economic, social, physiological, and psychological).

The causal contribution of exports to individual well-being is identified through a shift-share approach. Rather than actual local exports, which are not available to us after 2014 and would reflect many supply shifters that simultaneously affect exports and living conditions in a given city, we consider an exogenous measure of export opportunities. The latter is calculated as the weighted average of the portion of industry-level exports that is determined by foreign-demand conditions, with weights defined by the initial industry composition of local employment. This shift-share design eliminates potential confounders such as supply-side dimensions and isolates the impact of local exports resulting only from changes in foreign demand for imports.[2]

In our main analysis, we rely on an ordered logistic regression model that accounts for the ordinal nature of our dependent variable, life satisfaction, and investigate whether individuals living in areas more exposed to increased export opportunities report worsening or improving life satisfaction relative to those living in less exposed areas. Our identification strategy appeals to the panel structure of our data to exploit changes in life satisfaction over time for the same individual, rather than a cross-section comparison of different individuals.[3]

Our results reveal an overall positive and significant impact of exports on life satisfaction that is robust to the inclusion of macroeconomic controls (e.g., population, industrial structure, income, and pollution). We extend these first results by exploring the different channels through which exports are likely to improve people's perceived quality of life. An indirect effect via health and income is clearly identified. An increase in export opportunities is associated with worse reported health but higher income. The positive and significant effect of exports on life satisfaction remains even after controlling for these two indirect

1 China's territory is divided into 339 prefectures, each of which generally includes an urban area and a rural area. We use the terms prefecture and city interchangeably.

2 We estimate a gravity equation, at the HS2 product level, to eliminate the components of Chinese exports due to supply forces and trade frictions, and to identify the ones specific to foreign demands. We then project the latter components onto each prefecture on the basis of its pre-period exposure measured by the corresponding industry's share of local employment (see Section 2.2). This approach ensures that we solely exploit changes in exports that reflect external demand conditions and are orthogonal to local supply shocks.

3 This eliminates any problems arising from unobserved time-invariant characteristics of the individual (personality, physiological characteristics, etc.) or the locality (climate, topography etc.). We also control for time-varying individual attributes (e.g., age, marital status, and number of children) and local characteristics (by including local macroeconomic variables and province-year fixed effects).

channels, as well as the standard set of individual determinants of individual well-being (age, marital status, etc.). Our baseline estimates indicate that the average change in export opportunities observed over the period in our sample (3.58 percent between 2010 and 2016) increases the odds of reporting a higher satisfaction category by 29.5 percent.

How can we explain this direct positive effect of exports on self-reported well-being? We present consistent evidence suggesting that the effect is mediated by the individuals' work environment and career prospects. First, we find that the impact of export opportunities on well-being is related to labor-market participation. The gains exist only for individuals who are working or of working age. We do not detect a significant effect for the elderly or inactive.[4] Second, consistent with the comparative advantages of the Chinese economy, export opportunities benefit workers in manufacturing more than in agriculture and services, and low-skilled workers more than those with a high level of education.[5] We also measure a greater impact of export opportunities on men's life satisfaction than on women's. This is consistent with the findings that men give more weight in assessing their satisfaction to aspects related to their professional status (Senik 2015; Stevenson and Wolfers 2009).

To further support the intuition that the impact on well-being corresponds to improvements in the economic sphere (working conditions, career opportunities, or income prospects) and not the private sphere, we use data on different key components of life satisfaction. We find a strong positive impact of export opportunities on job satisfaction, but no effect on other measures of subjective satisfaction—such as satisfaction with family life, satisfaction with local medical services, or trust—which are more directly related to personal elements distinct from local economic conditions.

We carefully address various issues that may call into question the reliability of our results. First, we verify that our results are robust to the use of alternative indicators of export opportunities and estimators (including IV and first difference). Second, we present a variety of robustness analyses to ensure that our results are not driven by endogeneity or pre-trends. We verify that the results are not simply due to the initial pattern of industrial specialization, and we present several falsification tests as well as results taking into account the non-randomness in shock exposure (Borusyak and Hull 2023). Last, we pay attention to migration and attrition problems. Our baseline sample is limited to individuals who remain in the same prefecture over the period, as we cannot identify the new place of residence of those who change prefecture and move to a county outside the original CFPS sample. In table S.1 in the supplementary online appendix, we verify that the improvement in life satisfaction that we attribute to exports is not the result of a process of selective migration of individuals that would cause the losers of the export expansion to move to another prefecture or disappear from the CFPS sample.

Our paper is part of three strands of literature. First, it is related to the recent literature that shows that trade-induced economic changes have repercussions on the well-being of individuals that go beyond an effect on their real income. Trade shocks are proven to affect various non-monetary determinants of welfare: health (Bombardini and Li 2020; Pierce and Schott 2020; Hummels, Munch, and Xiang 2024), child labor and schooling (Edmonds and Pavcnik 2005; Edmonds, Topalova, and Pavcnik 2009; Edmonds, Pavcnik, and Topalova 2010; Oster and Steinberg 2013; Atkin, Faber, and Gonzalez-Navarro 2018), marriage and fertility (Autor, Dorn, and Hanson 2019; Keller and Utar 2022; Ouyang et al. 2022), housing prices and provision of public goods (Feler and Senses 2017), and political polarization (Dippel et al. 2022; Che et al. 2022; Autor et al. 2020; Blanchard et al. 2024). Our contribution consists in using as explained variable the level of life satisfaction directly reported by individuals differentially exposed to the change in international demand for Chinese exports so as to estimate a coefficient that synthesizes the different

4 The contrasting results by age and labor-market participation of the respondents suggest that the basic findings of a beneficial effect of exports on life satisfaction do not solely reflect the omission of local variables reflecting local quality of life conditions since the omitted variable bias would apply to all individuals.

5 It should be noted, however, that due to spillover effects and inter-industry linkages within local labor markets, the effect should not be limited to workers active in the export industry alone.

opposing effects linking exports and well-being elements. Our work is thus close to that of Li et al. (2019) who exploit the 2014 China Family Panel Survey to study the impact of trade liberalization on individuals' long-term human capital accumulation, including non-cognitive outcomes. However, our identification is not limited to exploiting variation across individuals in the same prefecture in 2014, but exploits variation in life satisfaction over time for a given individual.[6] Our study is also related to Campante, Chor, and Li (2023), who analyze the influence of export dynamics in Chinese prefectures on labor strikes and career prospects of local officials.[7]

Moreover, our paper is part of the literature on the determinants of life satisfaction in China. The fact that the happiness of millions of Chinese people lifted out of poverty in a few decades has not increased significantly remains a puzzle for economists and sociologists. The existing literature points to a number of macroeconomic factors, such as the dismantling of safety nets (Easterlin et al. 2012), growing frustration with the emergence of a more individualistic and unequal society (Bartolini and Sarracino 2015), or environmental degradation (Zhang, Zhang, and Chen 2017). We complement these analyses not only by focusing on exports, an important driver of economic growth, structural transformation, and changing labor conditions in China, but also by identifying causal links. Our results suggest that exports improve individuals' perceived well-being through their satisfaction with their working lives beyond an income effect and despite its negative impact on health.

Finally, we contribute to the literature on the "China syndrome' (Autor, Dorn, and Hanson 2013, 2019, 2021; Autor et al. 2014; Acemoglu et al. 2016), which documents the negative consequences of the pressure of China's growing export capacity on employment, income, and welfare in importing countries. We are among the first to assess the social consequences of Chinese exports from the opposite perspective by analyzing here the consequences for people living in exporting regions. By exploring the other side of the coin we contribute to a more comprehensive assessment of the well-being repercussions of globalization at the world level. Our work complements that of Erten and Leight (2021) and Ouyang and Yuan (2019), both of which focus on the link between China's increased access to the US market in the decade following China's accession to the WTO in 2001 and the subsequent structural transformation at the Chinese county level. In contrast, our approach considers variations in exports generated by changes in demand from all partner countries over a more recent period (2010–2016). While our data are not as rich as theirs to study in detail the reallocation of productive factors from agriculture to manufacturing and migration dynamics, our results depict a similar process by which exports benefit workers. However, our study goes beyond the monetary and employment aspects by covering the impact of exports on health and life satisfaction.

The remainder of the paper is structured as follows. Section 2 describes our data and our measure of local export opportunities. Section 3 presents the empirical specification. Section 4 presents our benchmark results. It shows the extent to which individual subjective well-being in China has been influenced by export opportunities. This section also examines the effects on individual health and income, the two most obvious transmission channels through which changes in export opportunities can influence well-being. Section 5 runs a variety of robustness checks. In Section 6 we investigate the role of labor-market participation as a channel for the well-being contribution of export opportunities. Section 7 concludes.

6 In unreported results, we confirm Li et al. (2019)'s result of a negative relationship between exports and education and respondents' well-being in the absence of individual fixed effects. But the result reverses when we control for unobserved individual heterogeneity, as we do in our baseline.

7 Their study, also based on a shift-share indicator, reveals that the export slowdown leads to an increase in the number of labor strikes, which increases the probability that a prefectural party secretary will be replaced by the central government.

2. Data Sources and Measures

2.1. CFPS Data

We use data from the Chinese Family Panel Surveys (CFPS) for the years 2010, 2012, 2014, and 2016. The CFPS is a nationally representative longitudinal survey that interviews about 30,000 individuals per year. These surveys were carried out in 125 different prefectures, which is the 4-digit level of the Chinese spatial-coding system.[8] The face-to-face surveys conducted by CFPS collect demographic information (age, gender, marital status, number of children, place of residence, level of education, etc.), as well as answers to questions on economic activities, well-being, health, family relationships, and lifestyle habits (Xie and Hu 2014).

Table A.1 provides summary statistics for the key variables we use as dependent variables or controls. Our baseline sample after a basic cleaning process[9] includes a total of 45,413 individuals over 15 years of age, across 125 prefectures. Since we focus on the well-being repercussions from exports that transit through labor-market participation and working conditions, we will distinguish between individuals who are of working age and those who are not. Individuals are considered to be of working age when they are 20 years or older until the official retirement age, which is 60 years for men and 55 years for women. According to this definition, about 60 percent of our sample is of working age.

Life Satisfaction and Health Status

Our main variable of interest is the response on the life satisfaction question, which is asked in a consistent way in all four waves. Respondents are asked, "How satisfied are you with your life?," with answers on a scale of 1 (very dissatisfied) to 5 (very satisfied). This measure of well-being, without any explicit time reference, is an overall assessment of life (Deaton and Stone 2013). The replies thus take into account the extent to which the respondent's personal experience matches their long-term aspirations and expectations, and are less affected by recent emotional shocks (Stone and Mackie 2014).

Certain changes in the questions asked and in the measurement scales used complicate our analysis. For example, a question on job satisfaction is asked in 2010, 2014, and 2016, but not in 2012, while a question on satisfaction with family life is only asked in 2012 and 2014. In addition, we were forced to construct a health score variable with only three categories (1=poor, 2=fair, 3=good) to ensure comparability across survey waves, because the five answer options themselves vary slightly across years.

Income Variables

For our income variable, we rely on per capita family income (total declared household income divided by the number of household members). This variable is well documented in the various surveys and appears to be consistent with the macroeconomic data published in China's statistical yearbook. We prefer this variable to individual income for two main reasons. First, family income better measures the overall financial means of an individual and second, individual income is not well reported in the survey (see appendix A.2 for more details).

Other Local Data

We use a series of prefecture-level socioeconomic variables as controls in our regressions to account for important structural determinants of life satisfaction in a location that have been highlighted in the literature (per capita income, population, economic specialization, etc.). These variables are potentially correlated with local export opportunities. Including them in our specification allows us to capture the impact of increased local export opportunities on life satisfaction that are not specific to the working population and are relevant to the population as a whole (e.g., pollution, as highlighted by Bombardini and Li 2020). In all our specifications, we control for the following variables coming from the China City

8 The prefecture level is the one below the province level. China is divided into 4 municipalities (Beijing, Tianjin, Shanghai, and Chongqing) and 27 provinces, which are further divided into 334 prefectures.

9 We drop observations with missing or inconsistent information on our variables of interest.

Statistical Yearbooks: GDP per capita, share of the primary sector in GDP, share of secondary sector in GDP, population, and SO_2 emissions per capita. Summary statistics are reported in table A.1.

2.2. Local Export Opportunities

Following the recent literature on trade shocks, notably Autor et al. (2020) and Autor et al. (2021), we employ a shift-share approach in order to identify the impact of local export activities on life satisfaction. Instead of using actual exports, we build the ExpOpp indicator, which measures the exposure of Chinese prefectures to foreign demand. It is computed so as to remove supply shocks stemming from within China that can simultaneously affect exports and individual well-being.[10]

Our empirical design utilizes variation across industries in demand from foreign trade partners, in conjunction with variation across Chinese cities in the composition of employment by industry reported in the base year 2009 (i.e., one year before the first wave of the CFPS). Our measure of export opportunities for each Chinese prefecture c in year t, ExpOpp_{ct}, is the sum of foreign demand over all industries, weighted by the respective initial industry shares in local employment (s_{ck}):

$$\text{ExpOpp}_{ct} = \sum_k s_{ck,t_0} \text{FD}_{kt}, \quad \text{with } \text{FD}_{kt} = \frac{\sum_d D_{dkt}}{Y_{k,t_0}}, \tag{1}$$

where $s_{ck,t_0} = \frac{L_{ck,t_0}}{L_{c,t_0}}$ is the share of industry k in prefecture c's total employment in the base year $t_0 = 2009$.[11] The variable FD_{kt} is computed as the sum of the foreign demand from all foreign partners d in an industry k and year t ($\sum_d D_{dkt}$) divided by China's output for this industry in the base year (Y_{k,t_0}).[12] Industry-level output normalization is used to estimate the shock of the change in foreign demand as a proportion of Chinese output.

We estimate country-industry import demand, D_{dkt}, from a standard structural gravity equation on bilateral trade flows between all countries in the world (Head and Mayer 2014).

We estimate the following gravity equation in log form:

$$\ln \text{EX}_{odkt} = \ln S_{okt} + \ln \phi_{odkt} + \ln D_{dkt} + u_{odkt}, \tag{2}$$

where EX_{odkt} denotes the bilateral export flow of industry k from origin country o to destination country d in year t. It is made of three components and an error term, u_{odkt}. The variable S_{okt} represents the overall supply capacity of the exporting country for industry k, ϕ_{odkt} reflects the accessibility of market d for the exporters of good k from location o, and D_{dkt} captures the market capacity, i.e., all the factors of the demand for imports by country d for industry k.

We extract the third component from the gravity equation, D_{dkt}, to obtain the determinants of the trade flows that relate only to foreign demand and not to the exporters' supply capacity or bilateral trade costs. As further detailed in appendix A.3, we follow Redding and Venables (2004) and capture the log of

10 Note that we do not use an IV approach in our main specification but rely on a reduced form where we estimate directly the impact of our local export opportunity measure on life satisfaction. In the robustness checks in Section 5.2, we use this shift-share variable as an instrument for city-level exports and show that our results hold. However, this 2SLS approach is not compatible with the ordered logit estimation that is best suited to the ordinal nature of our life satisfaction indicator. In addition, we do not have access to actual local exports for all years covered by the CFPS survey.

11 Our approach follows Kovak (2013)'s recommendation to omit the non-tradable sector when constructing a local weighted average of trade shocks and to rescale the weights for the traded industries such that they sum to 1.

12 An alternative to the FD_{kt} terms in equation (1) is world exports excluding China as used in Campante, Chor, and Li (2023). However, the global reallocation of production capacity brought about by China's internationalization is likely to generate an inverse association between China's exports and the rest of the world's exports, raising important endogeneity concerns.

importer market capacity ($\ln D_{dkt}$) with importer-industry-year fixed effects.[13] The exponential value of the estimated importer fixed effects, $\widehat{D_{dkt}}$, is then summed by industry and year over all importers from China to obtain FD_{kt} as defined in equation (1).

This standard gravity-equation approach isolates variations in Chinese exports that can be attributed to changes in product-level demand in foreign markets and are thus exogenous to local factors affecting overall export capacity in a given Chinese region, such as the number of exporting firms, locally available technology, local government policies, and trade frictions with certain trading partners (Hering and Poncet 2010; Campante, Chor, and Li 2023). Our indicator ExpOpp_{ct} hence excludes supply-side forces and relies solely on sources of variation in the external component, D_{dkt} (determined by the demand conditions of partner countries), of sectoral exports. The latter are then projected onto each prefecture on the basis of pre-determined weights (s_{ckt_0}). In our empirical approach, we use the ExpOpp_{ct} variable in log in line with the literature on market potential. Market potential, which can be structurally estimated based on the same components (D_{dkt} in equation (2)) in a gravity equation (Redding and Venables 2004), is found to be a key positive explanatory variable in wage equations, estimated in log-log specifications on a regional-level basis (Redding and Venables 2004; Head and Mayer 2006, 2011) and at the individual level (Fally, Paillacar, and Terra 2010; Hering and Poncet 2010). The logarithmic transformation is also empirically useful for dealing with the skewness of our variable's underlying distribution that appears in the descriptive statistics reported in table A.1.[14]

Further details and summary statistics are provided in table A.1 and section S3 in the supplementary online appendix. Columns 1 and 2 in table A.3 confirm that our indicator is positively correlated with actual local exports for the three years (2010, 2012, and 2014) for which we have prefecture-level export data.

3. Empirical Strategy: Repercussions of Local Export Opportunities on Individuals

We use the following empirical specification to assess the repercussions that rising demand for exports have on the well-being of Chinese workers:

$$Y_{ct}^{i} = \beta \ln \text{ExpOpp}_{ct} + \gamma Z_{t}^{i} + \gamma W_{ct} + \lambda^{i} + \theta_{pt} + \epsilon_{ct}^{i}, \tag{3}$$

where i denotes individuals, c the prefecture where they live, and t the year of observation, i.e., 2010, 2012, 2014, or 2016. Our main outcome variable Y_{ct}^{i} is self-reported life satisfaction, which is a categorical variable measured on a scale from 1 to 5. We will also study other dependent variables, such as health status and income level. As linear estimators are not suitable for categorical outcome variables such as life satisfaction and health status, for which equal distances between categories should not be assumed, we rely for these variables on an ordered logistic model (McKelvey and Zavoina 1975; McCullagh 1980).[15]

The identification strategy to establish the causal relationship running from exports to individual well-being is based on the use of the export opportunity indicator ExpOpp_{ct} and on an analysis of time variation for a given individual. As detailed in equation (1) and discussed in Section 2.2, this indicator is constructed using a shift-share approach that focuses on the foreign-demand component of export flows by China and hence purges the China-specific supply-shifters of exports that are most likely to be tainted by endogeneity.

The inclusion of individual fixed effects λ^{i} removes any time-invariant determinants of living conditions that are specific to each individual. They also capture the invariant characteristics specific to each

13 Similarly, the supply capacities, $\ln S_{okt}$, are absorbed by origin-industry-year fixed effects, and the trade barriers, $\ln \phi_{odkt}$, ar roxied by standard bilateral gravity variables.

14 Unreported results, available upon request, confirm our main message when ExpOpp_{ct} is introduced in level and not in log. The positive impact on family income is, however, insignificant, possibly due to some outliers.

15 Results in table 5 and in table S.4 in the supplementary online appendix show that our key findings hold when using the OLS estimator instead of the ordered logit.

prefecture.[16] Equation (3) also includes province-by-year dummies θ_{pt} so that the estimate of β is identified by variations in export opportunities over time across prefectures within the same province. The vector Z_t^i includes a comprehensive set of conditioning variables that vary over time, including respondent's age, marital status, and number of children, as proposed by the literature (Oswald 1997; Knight, Song, and Gunatilaka 2009; Knight and Gunatilaka 2010; Easterlin et al. 2012).[17] The complete set of variables is provided in table A.2.

The vector W_{ct} captures time-varying prefecture characteristics that are potential determinants of local well-being. It includes the log of GDP per capita, industry specialization proxies, import competition, population, and SO_2 emissions per capita. These prefecture-specific controls ensure that our β coefficient detects differences in well-being as a result of the increase in exports that goes beyond macroeconomic gains or costs (such as structural transformation of the economy or the surge of pollution).[18] Finally, ϵ_{ct}^i is the error term. Standard errors are clustered at the prefecture level to account for the correlation between individuals within prefectures.[19]

Our specification may provoke a number of legitimate concerns. First, the validity of equation (3) rests on the assumption that, conditional on our set of individual and macroeconomic controls as well as the province-year and individual fixed effects, the error term ϵ_{ct}^i is not affected by other factors that are correlated with our export opportunities variable. The obvious omitted factors are local productivity or factor supply that may shape the local production (and therefore exports) and affect residents' well-being at the same time. The shift-share construction of our key variable, ExpOpp_{ct}, addresses this issue by employing not exports at the local level, but only the contribution of foreign demand to export performance, uncorrelated with local determinants.

One could still worry that the foreign-demand terms incidentally correlate with domestic demand or supply conditions prevailing in China. The inclusion of province-year dummies and macroeconomic controls in all our specifications aims at ensuring that such a risk is minimal. In table 8 we show that our results do not simply reflect the fact that some prefectures enjoy systematically higher export opportunities because of their non-random exposure to exogenous shocks in foreign consumer demand for products from booming sectors (Borusyak and Hull 2023).[20] Another set of checks presented in table 7 verifies that our results are not confounded by time-varying prefecture-level determinants, such as pre-trends linked to the initial local industry structure.

A second legitimate source of concern in our specification relates to the nature of our key dependent variables. The analysis of responses to questions asking individuals to rate their level of health or to report their subjective well-being in a few ordered categories confronts us in particular with the problem of scaling: mental scales may vary across individuals (one person's 2 may correspond to another person's 3). This problem is, however, mitigated by the fact that we follow the satisfaction of the same individual over time. Section 5 further shows that the results continue to hold using a binary dependent variable for high satisfaction or a rise in satisfaction in a first-difference model.

16 To fit our ordered logit model with individual fixed effects, we rely on the "blow-up and cluster" (BUC) estimator introduced by Baetschmann, Staub, and Winkelmann (2015).

17 Note that all time-invariant individual characteristics, such as gender, are captured by the individual fixed effects.

18 We also test the robustness of our results by including a longer list of controls for local amenities (number of hospitals, number of schools of various levels, and number of theaters). Unfortunately, these additional variables are not available for all locations and years. However, since none of them attracts a significant coefficient or alters the measured positive association between export opportunities and perceived life satisfaction, we do not retain them in our baseline specification.

19 Results are not sensitive to the choice of cluster and all conclusions hold if we cluster at the province level. We also check in table A.5 that our key findings are robust when accounting for the possibility that the regression error terms are correlated across prefectures that do not belong to the same province, an issue put forward by Adã et al. (2018).

20 In Section 5.3 and in appendix A.4, we present various checks to show that our main results do not depend on the choices made for weighting and normalization in the construction of our export opportunities indicator.

Table 1. Export Opportunities and Life Satisfaction (Ordered Logit)

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable:	Self-reported life satisfaction (low = 1 to high = 5)					
	Working-age population (columns 1-4)				*Benchmark*	All
Ln ExpOpp$_{ct}$	1.424^{b}	1.865^{a}	1.410^{b}	1.848^{a}	2.224^{a}	2.003^{b}
	(0.686)	(0.699)	(0.692)	(0.703)	(0.691)	(0.828)
Ln GDP pc$_{ct}$	–	−0.673	–	−0.659	−0.786^{c}	−0.414
		(0.426)		(0.418)	(0.436)	(0.461)
ln primary GDP$_{ct}$	–	0.137	–	0.128	0.150	0.182
		(0.280)		(0.282)	(0.278)	(0.278)
ln secondary GDP$_{ct}$	–	0.230	–	0.235	0.261	0.212
		(0.244)		(0.243)	(0.249)	(0.265)
Ln pop$_{ct}$	–	−0.671	–	−0.635	−0.792^{c}	−0.574
		(0.440)		(0.434)	(0.465)	(0.497)
Ln SO_2 pc$_{ct}$	–	0.098^{c}	–	0.099^{c}	0.098^{c}	0.090^{c}
		(0.053)		(0.053)	(0.051)	(0.047)
Ln ImpComp$_{ct}$ (HI)	–	1.233^{b}	–	1.270^{b}	1.300^{b}	1.238^{b}
		(0.627)		(0.627)	(0.612)	(0.605)
Ln ImpComp$_{ct}$ (LI)	–	0.088	–	0.075	0.084	−0.058
		(0.209)		(0.209)	(0.218)	(0.255)
Ln family income pc$_{ht}$	–	–	–	–	0.046^{a}	0.045^{a}
					(0.013)	(0.011)
Health status$_{it}$	–	–	–	–	0.390^{a}	0.369^{a}
					(0.021)	(0.019)
Individual controls	Age (columns 1-2)		All individual controls (columns 3-6)			
Fixed effects	Individual and province-year fixed effects					

Source: Own estimations.

Note: **Sample**: Columns 1–5: 71,624 observations. Individuals of working age (men aged 20–60, women aged 20–55). Column 6: 117,163 observations. All individuals. **Time-varying individual controls**: ln age, ln age squared, having a partner, number of children, education, having a job, local hukou registration, urban location, migrant, CPC membership. Marginal effects of ordered logit estimates are reported. Heteroskedasticity-robust standard errors clustered at the city level in parentheses. ^{a,b}, and ^{c}indicate significance at the 1 percent, 5 percent, and 10 percent confidence levels.

4. Effects of Export Opportunities on Life Satisfaction

This section looks at the possibility that export growth affects individual well-being. The empirical approach is therefore based on a regression of individuals' life satisfaction indicators on their prefecture's export opportunities. We will see that an increase in export opportunities has a positive effect on well-being, which is robust to the inclusion of controls for macroeconomic (prefecture-level) and individual characteristics. This section also explores the role of two potential channels for the link between exports and well-being already discussed in the literature, namely effects mediated by individual health and income.

4.1. Baseline Results

Table 1 reports our benchmark results for equation (3). We use the ordered logit estimator on the well-being score scaled between 1 (very dissatisfied) and 5 (very satisfied).[21] Changes in global demand for goods exported by Chinese prefectures can influence the well-being of their residents in a number of ways. We hypothesize, however, that this influence comes primarily through changes in economic opportunities and working conditions. This is why our analysis focuses primarily on the working-age population.[22]

21 Table S.4 in the supplementary online appendix reports the results using the OLS estimator.

22 However, we also present estimates for the whole population, and section 6 reports the detailed results for different categories of individuals.

Columns 1 to 5 of table 1 focus on working-age individuals only and progress to our baseline specification, which is then replicated in column 6 for the complete sample, which includes non-working-age respondents.

To comprehensively assess the importance of macroeconomic and individual-level variables in self-reported life satisfaction, we report five successive and complementary estimates. Column 1 begins with a very simple specification, which includes only our main variable of interest, export opportunities, along with individual and province-year fixed effects. Column 2 adds all macroeconomic variables. Column 3 shows a specification with all time-varying individual controls, other than health status and income.[23] Column 4 includes both macro and individual controls. Finally, column 5 shows our benchmark specification, which includes two key determinants of individual life satisfaction: self-reported health status and income.

In all specifications on the sample of working-age individuals, the coefficient of our variable of interest, ExpOpp, is positive and significant. Using the point estimate from column 1, we compute that the average change in export opportunities of 3.58 percent between 2010 and 2016 (see table A.1) raises the odds of declaring a higher category of satisfaction (versus all lower scores) by 11.3 percent.[24] This estimate is not greatly affected by the introduction of individual controls (column 3), but it increases slightly and gains in significance when macroeconomic controls are added (column 2). With macroeconomic controls, our coefficient of interest rises to 1.865, which suggests that the average change in export opportunities increased the odds of declaring a higher level of life satisfaction by 19.5 percent (19.1 percent when individual controls are also added in column 4).

This increase in the coefficient suggests that there is some collinearity between macroeconomic controls and our export opportunity variable. This is not surprising given that all these variables are defined at the prefecture level and that exports play an important economic role in many Chinese localities. Nevertheless, the difference between the coefficients in column 1 and those in the following columns is relatively small in magnitude and not statistically significant. This is rather reassuring that the significant positive impact of exports on life satisfaction that we estimate is not simply due to bad controls.

In column 5, we further control for individual health status and per capita family income. Unsurprisingly, results confirm that health is a particularly important determinant of life satisfaction. Upgrading to a higher category of health (i.e., from "poor" to "fair", or from "fair" to "good") raises the odds in favor of a higher life satisfaction category by about 47.7 percent ($e^{0.390} = 1.477$). In comparison, income seems to play a less important role even if the regression indicates that better material conditions make people happier. The point estimate of 0.046 suggests that the average change in family income between 2010 and 2016 (reported at 41 percent in table A.1) raises the odds of life satisfaction to be in a higher category by 1.93 percent.[25]

Controlling for individual health and income also influences the coefficient on export opportunities, which increases in magnitude and statistical significance. The coefficient 2.224 reported in column 5 suggests that raising export opportunities during the period of observation has increased the odds of moving to a higher category of life satisfaction by 29.5 percent. While not statistically significant, the increase of our coefficient of interest is substantial and indicates that income and health, which are important determinants of life satisfaction, are likely to be also impacted by export opportunities. They therefore act as mediators of the impact of exports on life satisfaction, a role we examine in more detail in Section 4.2 below.

The specification presented in column 5 not only confirms that the increase in export opportunities during the 2010s has had a positive influence on the individual well-being of working-age Chinese. It

23 The coefficients on these variables are not reported here, but they are shown in the more comprehensive table S.5 in the supplementary online appendix.

24 This is computed as $0.0358 \times [e^{1.424} - 1]$.

25 This is computed as $0.41 \times [e^{0.046} - 1]$.

also shows that this effect goes beyond the potential impact of exports on the macroeconomic situation of prefectures and on the income and health of the workers living there. Existing literature has already highlighted a link between international trade shocks and economic growth, employment, income, and health, all of which are determinants of individual well-being. Our results suggest interestingly an additional effect on individual life satisfaction beyond these channels.[26]

Column 6 of table 1 presents the results of the benchmark specification estimated on all individuals, whether or not they are of working age. The coefficient of interest on the ExpOpp variable remains positive and significant, but it is smaller and less precisely estimated than in column 5. Table A.2 shows how the impact of export opportunities on life satisfaction varies between age groups. Individuals are broken down into four age categories (under 20, between 20 and 39, 40 up to retirement age, over retirement age). The breakdown is based on the age declared by the individual in the first survey (columns 1 and 2) or in the last survey (columns 3 and 4). The results consistently suggest that the positive and significant link between exports and perceived quality of life is strongest for people of working age. This supports our view that the link between exports and life satisfaction is mediated by factors related to professional activity (see Section 6 for further results on this point).

4.2. The Impact of Export Opportunities on Health and Income

The results shown in column 5 of table 1 suggest that personal health and income might be bad control variables in the sense that they are determinants of well-being that can also be influenced by export opportunities. If this is the case, part of the total effect of exports on well-being is channeled through these two variables. This is what this section examines in detail.

4.2.1. Exports and Health

Improved export opportunities raise the demand for labor, which can lead to an increased risk of illness and injury due to longer working hours and fatigue. Hummels, Munch, and Xiang (2024) show for Denmark that the competitive pressure and permanent adjustments brought about by the race for international markets can have deleterious effects on workers' physical and mental health. Previous studies on China show a rather ambiguous effect of the country's international integration on the health of Chinese workers. While Feng, Xie, and Zhang (2021) find that the reduction in export tariffs led to a decrease in malnutrition due to increased earnings and hours worked, this effect on earnings is not found by Fan, Lin, and Lin (2020). Instead, they point to the negative effects on health of the increase in working hours that followed the reduction in tariffs on imported inputs.

Table 2 investigates the relationship between exports and self-assessed health. The dependent variable here is a health score variable, defined as 1 (poor), 2 (fair), or 3 (good). In columns 2–3 and 5–6, we look at mental distress, which could rise following rapid export growth due to increased work pressure. The questions on mental health and depression vary slightly across survey rounds, but we construct a harmonized index that ranges from 1 (no depression) to 5 (very often/always feeling depressed). Results are based on the ordered-logit estimator to account for the non-ordinal dimension of the dependent variable.[27] Similar to table 1, we focus mainly on working-age population, but column 7 displays the results obtained on the whole sample of individuals. As indicated in Section 3, our benchmark specification includes numerous macroeconomic controls, as well as province-year fixed effects, so as to account for

26 We also explore the possible differential effect on life satisfaction depending on whether export opportunities increase or decrease in the two years preceding the survey. This allows us to take into account the specificity of the context in 2016 insofar as export opportunities in most of the cities in our sample declined between 2014 and 2016, whereas they had mainly increased in previous years. Point estimates are similar, suggesting that the effects of export opportunities are symmetrical.

27 The supplementary online appendix shows in table S.6 full results on all the control variables of table 2 and verifies that the results are robust when using the OLS estimator instead of the ordered logit (table S.7).

Table 2. Physical and Mental Health (Ordered Logit)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Sample:	Working age (columns 1-6)						All
Dependent variable:	Health	Depressed		Health	Depressed		Health
	(1–3)	(1–5)		(1–3)	(1–5)		(1–3)
Ln ExpOpp$_{ct}$	−3.528^{a}	0.746	0.326	−4.196^{a}	0.548	0.027	−3.475^{a}
	(1.061)	(1.090)	(1.020)	(1.091)	(1.329)	(1.256)	(0.997)
Ln family income pc$_{ht}$	–	–	–	0.027^{c}	−0.014	−0.010	0.024^{b}
				(0.014)	(0.012)	(0.013)	(0.011)
Health status$_{it}$	–	–	−0.476^{a}			−0.475^{a}	
			(0.024)			(0.024)	
Controls	Age (columns 1-3)			All individual and city-level (columns 4-7)			
Fixed effects	Individual and province-year fixed effects						

Source: Own estimations.

Note: **Sample**: Columns 1–6: 71,624 observations. Individuals of working age (men aged 20–60, women aged 20–55). Column 7: 117,163 observations. All individuals age 16 or older. **Time-varying individual controls**: ln age, ln age squared, having a partner, number of children, education, having a job, local hukou registration, urban location, migrant, CPC membership. **Time-varying city controls**: ln GDP per capita, ln primary GDP, ln secondary GDP, ln population, ln SO_2 per capita, and ln import competition. Marginal effects of ordered logit estimates are reported. Heteroskedasticity-robust standard errors clustered at the city level in parentheses. ^{a,b}, and ^{c}indicate significance at the 1 percent, 5 percent, and 10 percent confidence levels.

general equilibrium effects. To investigate the issue of bad controls that could affect the results in columns 4–7, columns 1–3 show the results of a simpler specification that removes all control variables likely to present a risk of endogeneity.[28]

The results in table 2 indicate that greater export opportunities are associated with a deterioration in perceived health. The coefficients in regressions with depression as an outcome variable (columns 2–3 and 5–6) are much smaller in magnitude and more noisily estimated, suggesting that export opportunities have no impact on depression. We can gauge the magnitude of the implied health effects using the odds-ratios interpretation of the coefficients. Using the coefficient of −3.528 from column 1 and the mean change between 2010 and 2016 of our key variable of export opportunities reported in table A.1, we compute that the average change in log export opportunities observed over our sample period reduced the odds of being in a higher health category (versus all lower ones) by about 3.5 percent.[29] With the addition of control variables, notably household income, we expect this coefficient to increase in absolute value. This is because an increase in export opportunities should raise incomes and, in turn, lead to better health. This is what we see in column 4, where income has the expected positive effect on health, and where the coefficient on ExpOpp increases in magnitude to −4.196. However, the effect of income is small and the increase in the impact of ExpOpp on health is not statistically significant.

The negative influence of export growth on health is confirmed in column 7, where the sample is extended to include people who are not of working age. The estimated effect is slightly weaker (but not statistically different). This is to be expected since the state of health of young people and the elderly is less dependent on working conditions and therefore on economic shocks linked to fluctuations in world demand.

The negative effects on physical health due to increased export opportunities is in line with the findings of Fan, Lin, and Lin (2020). This is consistent with a scenario in which greater foreign demand for local products leads to an increase in the pace of work and a deterioration in working conditions. In the absence of a countervailing mechanism, this confirms that the growth of Chinese exports has also had

28 We only control for log of age and log of age squared, which are important and exogenous determinants of health condition.

29 This is computed as $0.0358 \times [e^{-3.528} - 1]$.

Table 3. Export Opportunities and Family Income

	(1)	(2)	(3)	(4)	(5)
Dependent variable:	Ln family income (per capita)				
Sample:	Working-age households				All
Ln $ExpOpp_{ct}$	1.367[b]	1.513[b]	1.086[c]	1.321[c]	0.424
	(0.595)	(0.641)	(0.640)	(0.670)	(0.615)
Av. health $status_{ht}$	–	–	0.045[c]	0.060[b]	0.055[a]
			(0.024)	(0.024)	(0.019)
Controls	Average age (columns 1-2)		All household and city controls (columns 3-5)		
Fixed effects	Household and province-year fixed effects				
Sample size	32,531	34,504	30,027	31,704	39,945
R^2	0.005	0.005	0.034	0.033	0.041

Source: Own estimations.

Note: **Sample**: Column 1 and 3: Household head of working age (male: 20–65, female: 20–55). Column 2 and 4: Households with more than 25 percent of members of working age. Column 5: All households. **Time-varying household controls**: average age, number of children below 16, share of local hukou registrations, urban location, share of male household members, having a CPC member, maximum level of education, number of household members in working age, share of migrants, share of members with a job. **Time-varying city controls**: ln GDP per capita, ln primary GDP, ln secondary GDP, ln population, ln SO_2 per capita, and ln import competition. Heteroskedasticity-robust standard errors clustered at the city level in parentheses. [a,b], and [c]indicate significance at the 1 percent, 5 percent, and 10 percent confidence levels.

negative effects on important determinants of happiness. Some Chinese workers in places most exposed to increased foreign demand may have suffered from the expansion of trade. This finding supports the story of a detrimental China syndrome in both Western countries (mainly in terms of job and income loss) and China (in terms of occupational health). However, the results presented in the previous section indicate that this negative effect is not strong enough to dominate the benefits induced by the expansion of exports on other dimensions of subjective well-being.

4.2.2. Exports and Family Income

Table 3 focuses on the income channel, i.e., that increased exports lead to higher incomes that translate into higher life satisfaction for local residents. It has the same structure as table 2. The first two columns focus on households of working age and show the estimates obtained without potentially endogenous control variables. Our benchmark specification, with all the prefecture-level and individual controls comes next in columns 3 and 4. The last column shows the estimates obtained on the complete sample.

The dependent variable here is the log of per capita household income. This measure is common to all members of a given household. To avoid repeated observations, we aggregate the data at the household level. The set of controls is identical to that used in table 2, except that the individual controls are replaced by household averages.[30] We use two alternative criteria to classify a household as being of "working age" or not. Columns 1 and 3 are based on whether the head of the household is of working age, while columns 2 and 4 look at whether the household has more than 25 percent of its members of working age.

We find a positive and significant impact of export opportunities on per capita family income. This impact is small in magnitude and not very precisely estimated. It is greatly reduced and loses its significance when all households are included in the sample (column 5), which, again, suggests that the monetary effects of growing export opportunities transit through the labor market. This result is consistent with a

30 We replace dummy variables by the proportions of members validating the corresponding criterion and use either the averages or the maximum for the other indicators (age, education, etc.). As additional control in all specifications, we include the number of household members of working age. See table note for details.

Table 4. Alternative Indicators for Life Satisfaction

	(1)	(2)	(3)	(4)
Dependent variable:	Agg. life satisf. scale 1–3	Dummy for (very) satisfied (columns 2-4) LS > 1	LS > 3	LS = 5
Estimator:	Ordered logit	Logit	Logit	Logit
Ln ExpOpp$_{ct}$	1.918^{a}	2.572^{c}	1.592^{c}	2.029^{c}
	(0.736)	(1.359)	(0.882)	(1.097)
Health status$_{it}$	0.413^{a}	0.472^{a}	0.408^{a}	0.313^{a}
	(0.024)	(0.043)	(0.027)	(0.031)
Ln family income pc$_{ht}$	0.055^{a}	0.094^{a}	0.050^{a}	0.017
	(0.014)	(0.029)	(0.015)	(0.019)
Controls	Individual and city level controls			
Fixed effects	Individual and province-year fixed effects			

Source: Own estimations.

Note: **Sample**: 71,624 observations. Individuals of working age (men aged 20–60, women aged 20–55). **Time-varying individual controls**: ln age, ln age squared, having a partner, number of children, education, having a job, local hukou registration, urban location, migrant, CPC membership. **Time-varying city controls**: ln GDP per capita, ln primary GDP, ln secondary GDP, ln population, ln SO_2 per capita and ln import competition. Marginal effects of ordered logit estimates are reported. Heteroskedasticity-robust standard errors clustered at the city level in parentheses. ^{a,b}, and ^{c}indicate significance at the 1 percent, 5 percent, and 10 percent confidence levels.

wage-growth effect from exports (Hering and Poncet 2010; Fu and Wu 2013). In the absence of reliable data on individuals' participation in the labor market and on the number of hours worked, however, it is not possible to determine whether the effect on income reflects an increase in hourly wages or a greater number of hours worked.[31]

To gauge the magnitude of the implied effect, we again consider the average change in export opportunities of 3.58 percent between 2010 and 2016 reported in table A.1. The $\beta = 1.37$ point estimate from columns 1 and 3 corresponds to a 4.9 percent rise in family income. This represents about 12 percent of the average increase in income measured over the six-year period of our sample (computed at 41.2 percent).

5. Robustness Checks

We now return to our central finding on life satisfaction (column 5 of table 1). This section presents a series of tests designed to establish the robustness of this result. We propose various alternative specifications that take into account the ordinal nature of our variable of interest, as well as the identification challenges described in Section 3.

5.1. Alternative Measures of Life Satisfaction

Table 4 confirms that our main result is robust to the way our key explained variable of life satisfaction is coded. In column 1, the ordered logit estimator is used on a life satisfaction indicator that is more aggregated than in our benchmark, with three instead of five life satisfaction categories. For this, we

31 In unreported results, we also investigate the impact of export opportunities on the answers to the binary choice question in the CFPS survey "Do you have a job?" We do not find any significant impact, possibly because of the poor data quality, since the question asked in 2010 excluded most agricultural workers (see appendix A.2). Another explanation relates to the fact that only 3 percent of all respondents report being unemployed, leaving little room for increased employment due to greater export opportunities. It is moreover possible that, in the context of China's strong economic growth during the period of observation, employment status primarily reflects individual employability (linked to health conditions or age) or personal decisions related to marital and family status (e.g., individuals—often women—may decide to withdraw from the labor market to raise children or care for their elderly relatives), which are not affected by export opportunities.

recode the original answers: scores 1 (very dissatisfied) and 2 (dissatisfied) are combined, as well as scores 4 (satisfied) and 5 (very satisfied), while the intermediate score of 3 (fair) is kept unchanged. Columns 2 to 4 apply a logit estimator on binary indicators, which use different respective thresholds to distinguish between low and high life satisfaction. In column 2, the dummy equals 1 for a life satisfaction score above 1 (different from very unsatisfied), in column 3 the dummy is 1 for respondents that are satisfied or very satisfied with life, and in column 4 the dummy is 1 for a life satisfaction score of 5 (very satisfied) and 0 otherwise. All columns of table 4 confirm a positive and significant effect of exports on life satisfaction after health and income are controlled for.

5.2. Alternative Specifications : IV and First Difference

To assess the impact of exports on well-being, our baseline specification relies on a reduced-form specification that regresses life satisfaction on the shift-share variable of export opportunities instead of using this variable as an instrument for exports. While this is a standard approach (e.g., Facchini et al. 2019; Erten and Leight 2021), we would like to ensure that our results are verified when we use our shift-share variable as an instrument for exports. Unfortunately, we do not have access to data on exports by prefecture over the entire period under consideration.

Faced with the same problem, Bombardini and Li (2020) approximate prefecture-level exports by allocating Chinese exports by sector to prefectures on the basis of each prefecture's share of sectoral exports for a base year. These predicted exports are instrumented in a first-stage equation by a shift-share export variable. We show in table 5 that our message holds when we follow this strategy and compute $\widehat{\text{Exports}}_{ct} = \sum_k \frac{\text{Exports}_{ck,2009}}{\text{Exports}_{k,2009}} \text{Exports}_{k,t}$, where $\text{Exports}_{k,t}$ denotes total Chinese exports of industry k in year t, and $\text{Exports}_{ck,2009}$ the exports of industry k from prefecture c in 2009.[32]

Column 1 of table 5 reports the second-stage results of life satisfaction regressed on $\ln \widehat{\text{Exports}}_{ct}$, where the instrumental variable is our shift-share variable, $\ln \text{ExpOpp}_{ct}$.[33]

The first stage results for the estimated coefficient of $\ln \text{ExpOpp}_{ct}$ on $\ln \widehat{Exports}_{ct}$ are reported at the bottom of the 2SLS column, together with the Kleibergen–Paap F-statistic that is above the Stock–Yogo rule of thumb threshold of 10 for weak instruments and confirms the relevance of the shift-share approach to explain exports. The 2SLS point estimates are not significantly different from those of the reduced-form effect of our shift-share variable in a standard panel regression relying on an OLS estimator reported in column 2. This confirms that our measure of export opportunities is directly relevant for extracting the causal impact of exports on life satisfaction.

Columns 3 and 4 reproduce the results of columns 1 and 2, using the first-difference estimator as an alternative means of taking time-invariant individual characteristics into account, the λ^i in equation (3). The fixed-effect model was preferred so far as it is compatible with the ordered logit approach. Note that the first-difference estimator also imposes a sampling restriction as it requires respondents to be observed in two consecutive periods, which reduces the number of individuals included in the sample. It is reassuring that the estimates using the fixed effects or first-difference estimators are very similar since this is an indirect test of the strict exogeneity assumption for our variable of interest. Indeed, the fixed effect estimator requires strict exogeneity (no feedback from ϵ^i_{ct} to ExpOpp_{ct}) while the first difference estimator allows for feedback that takes more than two periods. Thus, the similar results obtained with both approaches suggest that endogeneity is not a major problem in our context (Wooldridge 2010).

5.3. Further Test of the Identification Strategy

In this section we describe the various checks we have implemented to ensure the validity of our identification strategy.

32 Total Chinese exports at the HS2 product level come from BACI (Gaulier and Zignago 2010).

33 Table A.3 shows the strong correlation between export opportunities and predicted exports at prefecture level.

Table 5. Alternative Estimators: IV and First Differencing

	(1)	(2)	(3)	(4)
Dependent variable:	Self-reported life satisf.		Δ Self-reported life satisf.	
Estimator:	IV	OLS	IV	OLS
Ln $ExpOpp_{ct}$	–	1.072[a]	–	–
		(0.319)		
Ln $\widehat{Exports}_{ct}$	1.096[b]	–	–	–
	(0.458)			
Δ Ln $ExpOpp_{ct}$	–	–	–	1.054[b]
				(0.483)
Δ Ln $\widehat{Exports}_{ct}$	–	–	1.113[c]	–
			(0.601)	
Health $status_{it}$	0.188[a]	0.185[a]	–	–
	(0.010)	(0.009)		
Ln family income pc_{ht}	0.023[a]	0.022[a]	–	–
	(0.006)	(0.005)		
Δ Health $status_{it}$	–	–	0.176[a]	0.170[a]
			(0.010)	(0.010)
Δ Ln family income pc_{ht}	–	–	0.010[d]	0.008
			(0.006)	(0.006)
Fixed effects	Ind. and province-year		province-year	
Controls	Individual and city level controls			
Sample size	69,257	71,624	37,882	39,208
R^2	0.541	0.541	0.087	0.087
First stage:				
β Ln $ExpOpp_{ct}$	0.973	–	1.039	–
	(0.226)		(0.226)	
p-value	0.000	–	0.000	–
F-stat	15.511	–	21.201	–

Source: Own estimations.

Note: **Sample**: Individuals of working age (men aged 20–60, women aged 20–55). **Time-varying individual controls**: ln age, ln age squared, having a partner, number of children, education, having a job, local hukou registration, urban location, migrant, CPC membership. **Time-varying city controls**: ln GDP per capita, ln primary GDP, ln secondary GDP, ln population, ln SO_2 per capita, and ln import competition. Heteroskedasticity-robust standard errors clustered at the city level in parentheses. [a,b], and [c]indicate significance at the 1 percent, 5 percent, and 10 percent confidence levels.

Table 6 looks at the sensitivity of the results to the presence of outliers in the sectors and localities considered. Columns 1 and 2 assess whether our results depend on the foreign demand of a particular industry among those considered in the calculation of our key explanatory variable. We are here worried that our baseline results are driven by endogeneity or pre-trend concerns that are associated with a particularly influential sector (Goldsmith-Pinkham, Sorkin, and Swift 2020). For this, we construct multiple versions of the export opportunities indicator that leave out one of the 2-digit HS industries at a time. Column 1 reports the minimum of the various regression estimates for the export opportunities and column 2 reports the maximum. These lower and upper bounds of the estimates are statistically indifferent. Both are positive and significantly different from zero, suggesting that our baseline results do not solely reflect particularly pivotal or influential industries for which the orthogonality conditions required for identification may fail. In columns 3 and 4, we verify that our results remain stable when we exclude observations from one province at a time to ensure that our results do not depend on the industry composition of a particularly influential location. The minimum and maximum of the various regression estimates for the export opportunities are reported in columns 3 and 4 respectively.

Table 6. Excluding One Category at a Time (Ordered Logit)

	(1)	(2)	(3)	(4)
Dependent variable:	Self-reported life satisfaction (1–5)			
	Dropping HS2 industries (columns 1-2)		Dropping provinces (columns 3-4)	
	Min	Max	Min	Max
Ln $ExpOpp_{ct}$	1.836[a]	2.670[a]	1.943[a]	2.619[a]
	(0.695)	(1.030)	(0.688)	(0.686)
Controls	Individual and city level controls			
Fixed effects	Individual and province-year fixed effects			
Sample size	71,624	71,624	65,447	65,341

Source: Own estimations.

Note: **Sample**: Individuals of working age (men aged 20–60, women aged 20–55). **Time-varying individual controls**: ln age, ln age squared, having a partner, number of children, education, having a job, local hukou registration, urban location, migrant, CPC membership. **Time-varying city controls**: ln GDP per capita, ln primary GDP, ln secondary GDP, ln population, ln SO_2 per capita, and ln import competition. Marginal effects of ordered logit estimates are reported. Heteroskedasticity-robust standard errors clustered at the city level in parentheses. [a,b], and [c]indicate significance at the 1 percent, 5 percent, and 10 percent confidence levels.

Table 7. Accounting for Pre-trends Related to Economic Structure (Ordered Logit)

	(1)	(2)	(3)	(4)
Dependent variable:	Self-reported life satisfaction (1–5)			
	Manuf. employment	Industry empl. shares		Export share
	× year	× trend	× year	× year
Ln $ExpOpp_{ct}$	2.147[a]	1.946[b]	1.638[b]	2.268[a]
	(0.695)	(0.765)	(0.786)	(0.702)
Controls	Individual and city level controls			
Fixed effects	Individual and province-year fixed effects			

Source: Own estimations.

Note: **Sample**: 71,624 observations. Individuals of working age (men aged 20–60, women aged 20–55). **Time-varying individual controls**: ln age, ln age squared, having a partner, number of children, education, having a job, local hukou registration, urban location, migrant, CPC membership. **Time-varying city controls**: ln GDP per capita, ln primary GDP, ln secondary GDP, ln population, ln SO_2 per capita, and ln import competition. Sectors in columns 2 and 3 are (a) animal products and vegetable products, (b) foodstuffs, (c) mineral products, chemicals, and plastics, (d) wood and wood products, (e) textiles, footwear, and leather, (f) metals, stone, and pearls, (g) machinery, vehicles, and precision instruments, and (h) furniture, toys, and art. Marginal effects of ordered logit estimates are reported. Heteroskedasticity-robust standard errors clustered at the city level in parentheses. [a,b], and [c]indicate significance at the 1 percent, 5 percent, and 10 percent confidence levels.

The various results we report in table 7 deal with the possible existence of specific pre-trends at the prefecture level due to their economic specialization. In column 1, we calculate the share of ASIF industrial employment in the city's total population in 2009, and introduce its interactions with yearly fixed effects. This approach also addresses the risk that our results may be biased because our data relate exclusively to the manufacturing industry. Our estimates are not significantly different from our baseline (column 5 in table 1), suggesting that our key message does not solely reflect different pre-trends in localities with different initial manufacturing shares. In column 2 we control for initial sector-level employment shares in the prefecture interacted with a time trend. To reduce the number of additional coefficients to estimate in the already demanding specification, we aggregate the 92 HS2 industries in our sample into eight broad sectors.[34] The coefficient on ln $ExpOpp_{ct}$ with these additional controls (none of them significant)

34 The sectors are (a) animal products and vegetable products; (b) foodstuffs; (c) mineral products, chemicals, and plastics; (d) wood and wood products; (e) textiles, footwear, and leather; (f) metals, stone, and pearls; (g) machinery, vehicles, and precision instruments; and (h) furniture, toys, and art.

Table 8. Falsification and Non-random Exposure (Ordered Logit)

	(1)	(2)	(3)	(4)	(5)
Dependent variable:	Self-reported life satisfaction (1–5)				
	Falsification (columns 1-3)			Non-random exposure (columns 4-5)	
Ln ExpOpp_{ct}	1.982[a]	–	–	2.115[a]	–
	(0.654)			(0.669)	
Ln ExpOpp_{ct+2}	−0.526	0.152	–	–	–
	(0.921)	(0.993)			
ln (μExpOpp_{ct})	–	–	–	1.520	–
				(2.094)	
ln ExpOpp_{ct} (recentered)	–	–	–	–	1.872[a]
					(0.661)
Av. β of placebo ln ExpOpp_{ct}	–	–	−0.08	–	–
			(1.20)		
Controls	Individual and city level controls				
Fixed effects	Individual and province-year fixed effects				

Source: Own estimations.

Note: **Sample**: 71,624 observations. Individuals of working age (men aged 20–60, women aged 20–55). **Time-varying individual controls**: ln age, ln age squared, having a partner, number of children, education, having a job, local hukou registration, urban location, migrant, CPC membership. **Time-varying city controls**: ln GDP per capita, ln primary GDP, ln secondary GDP, ln population, ln SO_2 per capita, and ln import competition. Column 3 reports the average coefficient of 600 regressions, each based on a different placebo ln ExpOpp variable. Marginal effects of ordered logit estimates are reported. Heteroskedasticity-robust standard errors clustered at the city level in parentheses. [a,b], and [c]indicate significance at the 1 percent, 5 percent, and 10 percent confidence levels.

is slightly lower but remains statistically significant at the 5 percent level. Column 3 adopts an even more demanding specification where the local employment shares of the different broad sectors are interacted with year fixed effects. The addition of these 24 (8 × 3 years) variables does not significantly affect the results.

In the same vein, column 4 takes into account the possibility that prefectures with a strong intrinsic export orientation simultaneously benefit from conditions favorable to an increase in the life satisfaction of their inhabitants. It adds the interactions between the prefecture-level ratio of initial total exports to output with year fixed effects. Our coefficient of interest remains positive and significant, suggesting that prefecture-specific pre-trends are unlikely to be at the root of our results.

Table 8 further examines potential identification problems. Columns 1 and 2 perform falsification tests in which we add the future value of the variable ExpOpp (column 1) or use it in place of its contemporary value (column 2). Specifically, we look at whether the life satisfaction of an individual in year t is influenced by the export opportunities in year $t + 2$. The coefficient we obtain on this forward indicator is not statistically significant, allaying the concern that our results could be driven by pre-determined trends in prefecture exports that might co-move with life-satisfaction conditions.

Column 3 proposes a falsification test with the random assignment of foreign demand observed at the product level, FD_{kt}, among the various products k. We then construct a false $\text{ExpOpp}_{ct}^{\text{false}} = \sum_k s_{ck,t_0}\text{FD}_{kt}^{\text{false}}$. The randomization means that this newly constructed regressor should have no effect on life satisfaction. In other words, any significant results of this placebo would indicate that there are significant omitted variables. We conduct this random data-generating process 600 times to avoid contamination by rare events. Column 3 reports the mean value and the mean of the standard errors of the estimates from the 600 random assignments. The mean value is not different from zero, in stark contrast to our estimate of a positive and significant effect in our baseline regression. Figure S.1 in the supplementary online appendix shows the distribution of all estimates and indicates that our true estimates are clear outliers in the falsification tests.

Columns 4 and 5 of table 8 attempt to account for the non-randomness in the exposure of prefectures to exports. The confounding factor of concern here is the average export opportunities that are likely to occur due to the particular specialization at the prefecture level. The differentiation between random and non-random components of export opportunities is based on the distinction between sectors and products within sectors. The idea is that some sectors are more buoyant than others and are characterized by more dynamic foreign demand, but that within these sectors, the distribution of foreign-demand shocks between products at a given date is random. Thus, the sectoral specialization of Chinese cities gives them a predisposition (non-random exposure) to foreign demand, but the true value of the export opportunities they will benefit from in a given year depends on the random shocks affecting products within the sectors.

Following an approach proposed by Borusyak and Hull (2023), we build a summary measure of non-randomness in shock exposure using permutations of the true foreign demand observed at the product level, FD_{kt}, among the various products k of a broadly defined sector.[35] These permutations, and the resulting FD_{kt}, are viewed as being as likely to have occurred. We perform 600 different permutations and obtain 600 versions of the indicator ExpOpp. We compute the average of these alternative indicators (called μExpOpp), and add the logarithm of it to our baseline specification. Results appear in column 4 of table 8. This indicator of non-random exposure to foreign demand reflects the heterogeneity of world markets across major sectors, irrespective of the contemporary demand received by the various products in these sectors. We introduce this indicator alongside our export opportunities indicator in order to purge the latter of export demand received by prefectures due to their non-random exposure to foreign demand at the sector level. The indicator of non-random exposure enters positively into our life-satisfaction regression, suggesting a predisposition to higher export opportunities in prefectures with high life satisfaction. However, our main result on the gain in life satisfaction following the increase in export opportunities is confirmed even after this source of endogeneity is taken into account.

Column 5 of table 8 follows the alternative approach proposed Borusyak and Hull (2023), which is to use μExpOpp to recenter the true ExpOpp. Concretely, we subtract ln (μExpOpp) from ln ExpOpp and use the result as our main explanatory variable. The recentered indicator of export opportunities enters with a positive and significant coefficient suggesting that the improvement in life satisfaction following the increase in export opportunities in a city does not solely reflect the local non-random predisposition to benefit from strong foreign demand.

In table S.2 and table S.3 in the supplementary online appendix, we consider additional checks that are proposed by recent work on shift-share approaches to check the exogeneity of the industry-level foreign-demand components of the ExpOpp indicator, following Borusyak, Hull, and Jaravel (2022). Even though our approach deviates from the conventional shift-share designs as we use the logarithm of ExpOpp, the fact that we find that the FD_{kt} components (in equation (1)) are "as good as randomly assigned" to Chinese prefectures strengthens our confidence in the reliability of our results.

6. Channels of Impact

The baseline findings reported in table 1 suggest that there is a direct positive and significant link between exports and perceived quality of life that is stronger for individuals of working age. These well-being gains go beyond positive income effects, and exist despite negative health impacts. This section presents further evidence that the positive effect of exports on well-being is mediated by the work environment and career prospects.

35 We use the same eight broad sectors as in columns 2 and 3 of table 7.

Table 9. Working vs. Non-working Individuals (Ordered Logit)

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable:	Self-reported life satisfaction (1–5)					
Sample:	Never work		Always work		Working with	
	def. 1	def. 2	def. 1	def. 2	sector information	
Ln $ExpOpp_{ct}$	0.866	0.879	2.195[b]	2.332[a]	2.080[a]	–
	(1.173)	(2.053)	(1.016)	(0.883)	(0.723)	
Ln $ExpOpp_{ct}$ × $agri_i$	–	–	–	–	–	1.226[c]
						(0.692)
Ln $ExpOpp_{ct}$ × $manuf_i$	–	–	–	–	–	2.255[b]
						(1.144)
Ln $ExpOpp_{ct}$ × $services_i$	–	–	–	–	–	1.395
						(0.930)
Health $status_{it}$	0.357[a]	0.405[a]	0.398[a]	0.389[a]	0.406[a]	0.406[a]
	(0.041)	(0.063)	(0.028)	(0.024)	(0.025)	(0.025)
Ln family income pc_{ht}	0.072[a]	0.040	0.020	0.035[b]	0.041[a]	0.041[a]
	(0.021)	(0.035)	(0.016)	(0.014)	(0.016)	(0.015)
Controls	Individual and city level controls					
Fixed effects	Individual and province-year fixed effects					
Sample size	23,253	9,737	37,394	49,431	52,870	52,870

Source: Own estimations.

Note: **Sample**: Column 1: All individuals aged 16+ who never report having a job. Column 2: All individuals aged 16+ who never report having a job or a personal income. Column 3: Individuals of working age who report having a job in all interviewed years. Column 4: Individuals of working age who report having a job or a personal income in all interviewed years. Columns 5 and 6: Individuals of working age (men aged 20–60, women aged 20–55) who report an industry code or activity in agriculture. **Time-varying individual controls**: ln age, ln age squared, having a partner, number of children, education, having a job, local hukou registration, urban location, migrant, CPC membership. **Time-varying city controls**: ln GDP per capita, ln primary GDP, ln secondary GDP, ln population, ln SO_2 per capita, and ln import competition. Marginal effects of ordered logit estimates are reported. Heteroskedasticity-robust standard errors clustered at the city level in parentheses. [a,b], and [c] indicate significance at the 1 percent, 5 percent, and 10 percent confidence levels.

6.1. The Role of Labor-Market Participation and Choice of Sector

Table 9 investigates in more detail the role of labor-market participation as a channel for the well-being gains from exports. The first four columns use alternative definitions to separate individuals according to whether or not they participate in the labor market. While the baseline results in table 1 distinguish between working-age and non-working-age respondents, table 9 draws on the responses, albeit imperfect, to the CFPS questions on labor-force participation and personal-income availability.

The first two columns are for individuals who are not working, as defined in two different ways.[36] Column 1 includes only individuals who never report working. We observe a non-significant effect of export opportunities on life satisfaction that holds in column 2 where also those who declare a personal income are excluded. Conversely, the next two columns focus on individuals who are working throughout the sample period. Column 3 focuses on working-age individuals who report having a job in all survey years, while column 4 uses a broader criterion including those who report having a job or personal income. In both columns, the impact of export opportunities is positive and significant. The contrast in results between the non-working and working groups confirms our idea that welfare gains from export opportunities are conditional on labor-market participation.

The last two columns exploit the information on the industries in which individuals work. In column 5, we rerun our benchmark specification but only on the sample of working-age individuals that report an

36 See appendix A.2 for the details on the choice and construction of the labor-force participation indicator.

Table 10. Job Satisfaction and Confidence in the Future (Ordered Logit)

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable:	Job satisfaction	Confidence into future	Life satisfaction (columns 3-6)			
Ln ExpOpp$_{ct}$	3.663^{a}	1.940^{b}	2.252^{b}	1.762^{c}	1.323^{b}	0.256
	(1.338)	(0.951)	(1.059)	(1.035)	(0.652)	(0.986)
Job satisfaction$_{it}$	–	–	–	0.326^{a}	–	0.271^{a}
				(0.028)		(0.034)
Confidence$_{it}$	–	–	–	–	0.832^{a}	0.907^{a}
					(0.023)	(0.036)
Health status$_{it}$	0.236^{a}	0.333^{a}	0.408^{a}	0.385^{a}	0.300^{a}	0.269^{a}
	(0.042)	(0.021)	(0.036)	(0.036)	(0.021)	(0.038)
Ln family income pc$_{ht}$	0.028	0.033^{a}	0.054^{a}	0.052^{b}	0.036^{a}	0.038^{c}
	(0.019)	(0.011)	(0.020)	(0.020)	(0.014)	(0.022)
Controls	Individual and city level controls					
Fixed effects	Individual and province-year fixed effects					
Sample size	38,533	71,513	38,533	38,533	71,513	38,504

Source: Own estimations.

Note: **Sample**: Individuals of working age (men aged 20–60, women aged 20–55). Columns 1, 3 and 6: years 2010, 2014, and 2016. Columns 2 and 5: 2010–2016. **Time-varying individual controls**: ln age, ln age squared, having a partner, number of children, education, having a job, local hukou registration, urban location, migrant, CPC membership. **Time-varying city controls**: ln GDP per capita, ln primary GDP, ln secondary GDP, ln population, ln SO_2 per capita, and ln import competition. Marginal effects of ordered logit estimates are reported. Heteroskedasticity-robust standard errors clustered at the city level in parentheses. ^{a,b}, and ^{c}indicate significance at the 1 percent, 5 percent, and 10 percent confidence levels.

industry code (and thus declare having a job).[37] We further include individuals who do not declare having a job but report some activity in agriculture. Although the availability of industry information is limited and thus significantly reduces our sample, the coefficient on our variable of interest in column 5 remains very similar and also significant at the 1 percent level.

In column 6, the export opportunity variable is interacted with dummies indicating the sector in which each individual participates.[38] We find that the effect on life satisfaction is clearly highest when individuals work in the manufacturing sector. This is not a surprise. Given that China's exports consist mainly of manufactured goods, it can be expected that the first to be affected by export shocks are those working in this industry.[39] As such, this result reinforces the claim that the link between export shocks and welfare is through working conditions.

6.2. Components of Life Satisfaction: Work and Family

Tables 10 and 11 investigate whether our baseline results correspond to a general rise in well-being across all life satisfaction domains or whether we can link foreign demand explicitly with individuals' satisfaction with their job or career perspectives. For this, we exploit the CFPS questions on satisfaction in work- versus non-work-related domains.

In table 10 we focus on answers to work-related questions. Column 1 replicates our benchmark results, replacing overall life satisfaction with job satisfaction as the dependent variable. Unfortunately, this variable does not appear in all waves of the surveys: job satisfaction is only addressed in the questionnaires

37 There are 21 industry categories, among which are different codes for agriculture (including fishing and forestry), mining, manufacturing, and production and supply of electricity. The remaining 17 codes are for 16 different service sectors and 1 code for "other industries."

38 Our sample includes about 5,300 individuals in manufacturing (compared to 11,000 in agriculture and 10,000 in services).

39 The effect, however, is likely to spread to other local workers, due to spillover effects and interdependencies between sectors.

Table 11. Other Personal Perceptions: Satisfaction and Trust (Ordered Logit)

	(1)	(2)	(3)	(4)
Dependent variable:	Satisfaction with		Trust in	
	family	medical service	parents	doctors
Ln $ExpOpp_{ct}$	2.663	0.072	1.329	1.388
	(2.770)	(0.966)	(0.973)	(1.985)
Ln family income pc_{bt}	0.024	−0.017	0.001	−0.016
	(0.021)	(0.012)	(0.014)	(0.018)
Health $status_{it}$	0.352[a]	−0.188[a]	0.113[a]	0.181[a]
	(0.039)	(0.026)	(0.027)	(0.039)
Controls	Individual and city level controls			
Fixed effects	Individual and province-year fixed effects			
Sample size	35,140	52,574	52,689	52,659

Source: Own estimations.

Note: **Sample**: Individuals of working age (men aged 20–60, women aged 20–55). Column 1: CFPS 2012 and 2014. Column 2–4: CFPS 2012–2016. **Time-varying individual controls**: ln age, ln age squared, having a partner, number of children, education, having a job, local hukou registration, urban location, migrant, CPC membership. **Time-varying city controls**: ln GDP per capita, ln primary GDP, ln secondary GDP, ln population, ln SO_2 per capita, and ln import competition. Marginal effects of ordered logit estimates are reported. Heteroskedasticity-robust standard errors clustered at the city level in parentheses. [a,b], and [c]indicate significance at the 1 percent, 5 percent, and 10 percent confidence levels.

in 2010 (with many missing observations), 2014, and 2016. As an alternative, column 2 considers the individuals' assessment of their confidence in the future, which is asked for all years. Confidence in the future is expected to also reflect job satisfaction and favorable job or career prospects. For both of these alternative dependent variables, we find the expected positive and significant effect of export opportunities. The coefficient on job satisfaction is highly significant and remarkably higher in magnitude than our benchmark estimate for overall life satisfaction, despite the small sample size.[40]

The last four columns look at whether life satisfaction gains from export opportunities extend beyond job satisfaction improvements. We look at how our key parameter of interest is affected when further controlling for the two proxies of work-related satisfaction used in the two previous columns. Column 3 reproduces our baseline specification on the reduced sample for which we have information on job satisfaction so as to confirm that our main result holds despite the smaller number of observations. Column 4 then adds the job-satisfaction indicator alongside our measure of export opportunities. We see that this addition reduces the point estimate and significance of the coefficient of export opportunities. We find very similar results in column 5 when adding confidence in the future into our benchmark results. When including both job satisfaction and confidence in the future in column 6, our key variable of interest has a coefficient much closer to zero and becomes non-significant, while the estimates for both job satisfaction and confidence into the future remain positive and highly significant. These findings strongly suggest that improvement in the work environment, including career perspectives, is indeed the main channel through which local export opportunities affect life satisfaction.

Table 11 verifies that our results do not solely reflect a general more positive attitude of individuals. It reports results of placebo tests on other personal attitudes which are a priori much less connected to the local economic situation as they depend more on personal circumstances or other local factors. Column 1 looks at satisfaction with family life. Perception of family-life quality is rated on the same scale of 1

40 It may seem surprising that agents' confidence in the future is sensitive to trade shocks which, in our analysis, are measured over short periods. However, it should be noted that variations in ExpOpp also reflect long-term trends in global trade. Moreover, the effects of economic shocks, even short-lived ones, can have long-term impacts on agents' living conditions, particularly in the presence of labor-market frictions.

Table 12. Heterogeneous Effects across Groups (Ordered Logit)

	(1)	(2)	(3)	(4)
Dependent variable:	Self-reported life satisfaction (1–5)			
Sample:	Men	Women	Low education	High education
Ln ExpOpp$_{ct}$	3.110^{a}	1.412^{c}	2.942^{a}	0.968
	(0.919)	(0.786)	(0.848)	(0.975)
Health status$_{it}$	0.393^{a}	0.390^{a}	0.346^{a}	0.435^{a}
	(0.025)	(0.030)	(0.029)	(0.028)
Ln family income pc$_{ht}$	0.037^{b}	0.056^{a}	0.025	0.064^{a}
	(0.016)	(0.016)	(0.017)	(0.016)
Controls	Individual and city level controls			
Fixed effects	Individual and province-year fixed effects			
Sample size	36,901	34,723	26,554	45,070

Source: Own estimations.

Note: **Sample**: 71,624 observations. Individuals of working age (men aged 20–60, women aged 20–55). **Time-varying individual controls**: ln age, ln age squared, having a partner, number of children, education, having a job, local hukou registration, urban location, migrant, CPC membership. **Time-varying city controls**: ln GDP per capita, ln primary GDP, ln secondary GDP, ln population, ln SO_2 per capita and ln import competition. Marginal effects of ordered logit estimates are reported. Heteroskedasticity-robust standard errors clustered at the city level in parentheses. ^{a,b}, and ^{c}indicate significance at the 1 percent, 5 percent, and 10 percent confidence levels.

to 5 as satisfaction with life in general[41] (unfortunately, this variable only appears in 2012 and 2014). Column 2 looks at the satisfaction with local medical services. The dependent variable in the last two columns is trust in parents and trust in doctors. In all columns, the coefficient on the export opportunities variable is positive but not significant. The lack of impact of exports on family-life satisfaction and trust in parents is consistent with the fact that personal relations largely reflect personal elements, such as the temperament of family members and how well they get on, but is not directly related to ones' economic or professional situation. Similarly, satisfaction with medical services and trust in doctors is more dependent on the local health services which could be correlated with the overall level of income of the prefecture, but reassuringly do not appear to relate to changes in local export opportunities.

Overall, we interpret the results of tables 10 and 11 as evidence that the main effect of changes in foreign demand goes via the work environment and labor-market participation. The positive association between life satisfaction and export opportunities does not reflect a general feeling of happiness over all domains of life, including the private ones. Instead, it corresponds to an improvement in the professional sphere, which is a likely mechanism for the transmission of non-monetary benefits from export opportunities. It is worth noting that the beneficial effect of exports on labor conditions in China is consistent with the observation that worker protests increased disproportionately in places where exports slowed the most after the mid-2010s (Ren, Friedman, and Li 2016; Campante, Chor, and Li 2023).

6.3. Heterogeneous Effects across Individuals: Gender and Education

We further explore our hypothesis of the privileged role of the labor market in the well-being gains generated by export opportunities by distinguishing individuals by gender and education level. Our specification corresponds again to our benchmark results using ordered logit in column 5 of table 1.

The first two columns of table 12 split our sample of respondents between male (column 1) and female (column 2). The results suggest that while export opportunities improve life satisfaction for both men and women, the gains appear greater for the former. We consider this to be consistent with the transmission role of labor-market participation to the extent that life satisfaction more closely depends on work-related

41 The question here is "Are you satisfied with your family?," answered on a scale of 1 to 5, with 1 being very dissatisfied and 5 very satisfied.

issues for men than women, with women's satisfaction depending on a wider range of life dimensions (Senik 2015; Stevenson and Wolfers 2009).

The last two columns of table 12 split our sample of respondents according to the education level of individuals. Individuals are considered to have a high level of education when they have at least completed junior high school, which is typically nine years of schooling, otherwise we consider them to have a low level of education. Results suggest that export opportunities benefit only the sub-sample of individuals with low levels of education (column 3). The coefficient for more-educated individuals in column 4 is positive but is much smaller and non-significant. These findings may be explained by the fact that educated workers have a greater ability to choose their jobs and thus their working conditions, without these being strongly dictated by the local dynamics of demand for the goods they help produce. Conversely, less-educated workers are likely to be those for whom local export opportunities have a more direct effect on employment conditions and prospects, while being the least likely to change jobs if they are dissatisfied.

7. Conclusion

We contribute to the assessment of the social impact of globalization by looking at the consequences of export opportunities on perceived well-being in China. We here estimate the relationship between a city's export opportunities and the life satisfaction of those who live there, using microeconomic data from the China Family Panel Studies in 2010, 2012, 2014, and 2016. Our results indicate that reported quality of life rises significantly as export opportunities grow. These well-being gains are contingent on labor-market participation and seem to be channeled through improved working conditions or job prospects, even if we also observe a negative impact on workers' health. The increase in life satisfaction induced by export opportunities that we measure does not simply reflect a general improvement in local economic conditions. It seems to correspond to an improvement in workers' satisfaction with their working lives, not a general improvement in satisfaction with their private or social lives.

Overall, our analysis provides an optimistic note to the ongoing debate over the social consequences of globalization. The rise of China as the factory of the world is often portrayed as a negative-sum game for workers around the world: the misfortunes of the low-educated workers in the developed countries whose jobs are challenged by Chinese imports would echo the woes of Chinese workers, exploited in factories with degrading working conditions. There is undoubtedly some truth in this story, as working conditions can still be harsh for many industrial workers in the China of the 2010s. Our analysis does not paint an idyllic image of globalization since we confirm that the expansion of China's export capacity comes at the expense of workers' health. Nevertheless, beyond increases in family income and despite the negative effect on health, we find that export expansion contributes directly, and fairly significantly, to the well-being of the Chinese, and especially for the least educated. It is of course impossible to say how these benefits for China compare with the social costs in advanced economies, but it is important to keep them in mind when discussing the consequences of globalization.

Finally, our analysis also contributes to discussions on the political and social challenges that China will have to face in the years ahead as the rebalancing of the economy towards its domestic market is expected to accelerate. The gradual shift away from an export-led growth strategy will have consequences for Chinese working conditions, economic prospects, and job satisfaction, which may call for the deployment of specific economic and social policies.

Data Availability

The data and do files for the replication of the results are available in Mendeley data https://data.mendeley.com/datasets/t4psgftvkf/1.

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Appendix

A.1. Additional Tables

Table A.1. Summary Statistics

	Obs.	Median	Mean	Std. dev.	Min.	Max.
Individual characteristics						
Life satisfaction$_{it}$	105,493	4	3.56	1.06	1	5
Health status$_{it}$	105,493	2	2.17	0.70	1	3
Ln fam inc. pc$_{ht}$	105,493	8.99	8.81	1.25	−1.61	14.2
Fam inc. pc$_{ht}$	105,493	8,000	12,126	19,563	0	1,518,024
Male$_{it}$	105,493	0	0.49	0.50	0	1
Age$_{it}$	105,493	47	47.1	16.0	16	98
Has job$_{it}$	105,493	1	0.76	0.42	0	1
Migrant$_{it}$	105,493	0	0.044	0.21	0	1
Ln age$_{it}$	105,493	3.85	3.78	0.38	2.77	4.58
Ln age$^2{}_{it}$	105,493	14.8	14.5	2.80	7.69	21.0
In couple$_{it}$	105,493	1	0.82	0.38	0	1
Nb children$_{it}$	105,493	0	0.47	0.78	0	7
Urban$_{it}$	105,493	0	0.46	0.50	0	1
CPC member$_{it}$	105,493	0	0.079	0.27	0	1
Urban hukou$_{it}$	105,493	0	0.28	0.45	0	1
Edu level$_{it}$	105,493	3	2.54	1.33	1	8
Δ Life satisfaction$_{it}$	64,509	0	0.042	1.27	−4	4
Δ Health status$_{it}$	64,509	0	−0.079	0.72	−2	2
Δ Ln fam inc. pc$_{ht}$	64,509	0.18	0.14	1.34	−10.3	10.4
$\Delta_{2010–16}$ Life satisfaction$_{it}$	18,931	0	0.15	1.31	−4	4
$\Delta_{2010–16}$ Health status$_{it}$	18,931	0	−0.22	0.79	−2	2
$\Delta_{2010–16}$ Ln fam inc. pc$_{ht}$	18,931	0.54	0.41	1.32	−9.29	8.48
Location characteristics						
Ln ExpOpp$_{ct}$	497	2.07	2.06	0.30	1.17	3.07
ExpOpp$_{ct}$	497	7.91	8.24	2.62	3.23	21.6
Ln ImpComp$_{ct}$ (HI)	497	3.46	3.47	0.48	1.90	5.22
Ln ImpComp$_{ct}$ (LI)	497	3.10	3.33	0.82	1.85	6.19
Ln GDP pc$_{ct}$	497	1.14	1.25	0.72	−0.69	3.53
ln primary GDP$_{ct}$	497	5.07	5.02	0.70	2.81	7.17

Table A.1. Continued

	Obs.	Median	Mean	Std. dev.	Min.	Max.
ln secondary GDP_{ct}	497	6.55	6.55	1.09	1.78	9.04
Ln pop_{ct}	497	6.08	6.07	0.61	3.04	8.13
Ln SO_2 pc_{ct}	497	4.47	4.43	0.93	1.54	6.55
Ln $Exports_{ct}$	485	14.0	13.8	2.23	7.53	19.1
Δ Ln $ExpOpp_{ct}$	497	0.0069	0.0076	0.028	−0.11	0.13
$\Delta_{2010–16}$ Ln $ExpOpp_{ct}$	123	0.033	0.0358	0.042	−0.096	0.26

Source: China Family Panel Studies (CFPS), China City Statistical Yearbooks and Customs office. See Section 2. Data Sources and Measures.

Note: The upper panel uses individual data from the CFPS of the years 2010, 2012, 2014, and 2016. The lower panel summarizes city-level variables. Both panels include the same 125 Chinese prefectures.

Table A.2. Interactions by Age Group (Ordered Logit)

	(1)	(2)	(3)	(4)
Dependent variable:	Self-reported life satisfaction (1–5)			
	Minimum age		Maximum age	
Interactions age group with health and income	No	Yes	No	Yes
Below 20 × ln $ExpOpp_{ct}$	1.450	1.557	−1.064	−1.037
	(1.472)	(1.464)	(3.526)	(3.537)
20 to 39 years old × ln $ExpOpp_{ct}$	3.502[a]	3.579[a]	3.481[a]	3.579[a]
	(0.832)	(0.830)	(0.867)	(0.865)
40 to retirement age × ln $ExpOpp_{ct}$	2.154[b]	2.155[b]	2.888[a]	2.898[a]
	(0.917)	(0.908)	(0.864)	(0.867)
Retirement age × ln $ExpOpp_{ct}$	−0.912	−1.001	−0.656	−0.713
	(1.300)	(1.316)	(1.203)	(1.211)
Controls	Individual and city level controls			
Fixed effects	Individual and province-year fixed effects			

Source: Own estimations.

Note: Maximum (minimum) age refers to the age declared by the individual in the first (last) survey. Sample: 117,163 observations. All individuals. **Time-varying individual controls**: ln age, ln age squared, having a partner, number of children, education, having a job, local hukou registration, urban location, migrant, CPC membership. **Time-varying city controls**: ln GDP per capita, ln primary GDP, ln secondary GDP, ln population, ln SO_2 per capita, and ln import competition. Marginal effects of ordered logit estimates are reported. Heteroskedasticity-robust standard errors clustered at the city level in parentheses. [a,b], and [c]indicate significance at the 1 percent, 5 percent, and 10 percent confidence levels.

A.2. CFPS Surveys

Our main data set is the China Family Panel Studies (CFPS) for the years 2010, 2012, 2014, and 2016. The CFPS is a nationally representative survey of Chinese communities, families, and individuals launched in 2010 by the Institute of Social Science Survey (ISSS) at Peking University.[42] It covers the whole Chinese territory apart from six peripheral provinces (Xinjiang, Tibet, Qinghai, Inner Mongolia, Ningxia, and Hainan).[43] The 2010 baseline survey includes nearly 15,000 households and over 30,000 adult family members. Follow-up surveys were conducted every two years, hence providing one of the first large-scale panel survey projects focusing on family and society in China (Xie and Hu 2014).[44]

42 The survey is downloadable at https://www.isss.pku.edu.cn/cfps/en/.

43 These peripheral provinces are large in size but relatively sparsely populated. They contain only 6 percent of the national population.

44 The CFPS uses a multi-stage probability strategy with implicit stratification to reduce the operational cost of the survey and better represent Chinese society. All sub-samples are obtained in three stages. In the first stage, the primary sampling

Our sample is nearly equally divided between men and women, with a median age of 46. The majority of respondents live in an area that is classified as "rural" (54 percent) (according to the Census Bureau's definition of urban and rural areas).[45]

Life Satisfaction. Our main variable of interest is the answer to the question on life satisfaction, which is the only question on overall well-being asked in all four waves.[46] Respondents are asked, "How satisfied are you with your life?," with answers on a scale of 1 (very dissatisfied) to 5 (very satisfied).

As indicated in table A.1, mean life satisfaction in our sample is 3.56, with a standard deviation of 1.06. Average life satisfaction fell from 3.47 in 2010 to 3.32 in 2012 before rising to 3.81 in 2014 and falling again to 3.63 in 2016. These levels and the upward trend between 2010 and 2014 are consistent with the results of other (much smaller) surveys, including the World Values Survey, Gallup, and the Chinese General Social Survey (see Easterlin et al. (2017) for a comparison and discussion). The CFPS data used here cover a much larger population across China, with individuals being followed over time and including information on a variety of demographic characteristics and location, which is key for our analysis.

Other Measures of Satisfaction and Trust. The CFPS survey also includes questions about satisfaction with specific aspects of life. Notably, the 2012 and 2014 surveys include a question on family life satisfaction (also on a 1–5 scale) while the 2010, 2014, and 2016 surveys include a question on job satisfaction ("In general, how satisfied are you with your job?"), answered on a scale of 1 to 5, with 1 being very dissatisfied and 5 very satisfied. All years also include a question on satisfaction with the quality of the local medical services.

Family satisfaction is high and rising from 3.47 in 2012 to 3.91 in 2014. In 2014, two-thirds of respondents reported high or very high satisfaction with their family situation (scores of 4 and 5). Average job satisfaction rose from 3.27 in 2010 to 3.51 in 2014, and then slightly declined in 2016 to 3.41. Under 10 percent of respondents declared being dissatisfied or very dissatisfied with their current job. A large share (43.8 percent) are neither satisfied nor dissatisfied, while 34 percent report being satisfied and 12 percent very satisfied. The correlation between family satisfaction and life satisfaction in our sample is high, at 0.77, and much higher than that between either of these indicators and job satisfaction (0.21 and 0.27 respectively).

Satisfaction with medical services is measured by responses to the question "Are you satisfied with the overall medical service of [the local health care provider]" on a scale of 1 to 5. It is asked in all survey years, but in 2010 it covers only a subset of individuals.

Trust in parents and trust in doctors are measured by responses to the questions "How much do you trust your parents?" and "How much do you trust doctors?", respectively and range on a scale from 0 (no confidence) to 10 (very trustworthy).

Health. We exploit the question on the perceived health status to construct a health score variable with three categories: 1 = poor, 2 = fair, 3 = good. Even though the question originally allows for five options, these answer options vary slightly for year to year, which leads us to reaggregate them to obtain a

unit is either an administrative district (in urban areas) or a county (in rural areas), in the second stage it is either a neighborhood community (in urban areas) or an administrative village (in rural areas), and in the third and final stage the unit is the household.

45 In unreported results available upon request, we question the representativeness of the individuals in our sample. Each of the four waves of CFPS data flags some observations (individual wave) as constituting a representative sample and provides individual weights. We show that our key finding of positive well-being gains from export opportunities holds when (a) using the representative sample (which only covers 99 of the 125 cities present in our baseline), (b) using individual panel weights from the 2016 survey, and (c) using weights at the local level to account for the fact that some localities were deliberately oversampled.

46 The surveys contain a number of questions about individual well-being but not in a systematic way across all waves. For instance, the 2010 and 2016 questionnaires include questions on satisfaction with specific aspects of work (pay and promotion) that are asked of a smaller subset of individuals.

consistent measure of health status over time.[47] The share of individuals indicating poor health is around 16 percent across all years. Self-rated health status deteriorated between 2010 and 2016 from 2.47 to 2.21 for the working-age population.

Income and Labor-Force Participation. Our main income variable is family income, defined as per capita household income (total declared household income divided by the number of household members). This variable is reported consistently across survey years and is preferred to reflect living standards over the individual income variable, which is not well recorded. After 2010, the latter excludes personal income from farming and home business and is only filled in by 16 percent of individuals in 2016 compared to 70 percent in 2010. Information on family income includes home-based agricultural production and is of good quality with levels corresponding to official data from the China Statistical Yearbooks. The average household income per capita of rural households was 9,890 yuan in 2014, more than twice as low as the average household income per capita of urban households, reflecting the gap between China's urban and rural areas (Piketty et al. 2019).[48] In the Chinese socialist and patriarchal cultural context, where many decisions reflect not only the prerogatives of the individual, but also those of the household, household income per capita appears to be a relevant indicator of individuals' incomes, especially for financially dependent household members, such as housewives, students, or the elderly.

We do, however, rely on individual income information to determine whether a person is working or not. In 2010, personal income is still recorded for 70 percent of our sample, but only about 60 percent of the working-age individuals indicated that they were working. This is due to the wording of the labor-force participation question, which was "Do you have a job?" in 2010 and led many self-employed and agricultural workers to answer no because they were not officially employed. In the later surveys the question on labor-market participation became "Did you work in the last week?," to which more than 80 percent of respondents answered positively.

We construct the dummy variable "has a job" as taking the value 1 for individuals who either report working or report personal income. This approach results in a similar percentage of people "having a job" across all years.

A.3. Construction of Export Opportunities

Export Opportunities: Construction of Main Variable. Our main explanatory variable, local export opportunities, is presented in equation (1), and defined as $\text{ExpOpp}_{ct} = \sum_k \frac{L_{ck,t_0}}{\sum_c L_{ck,t_0}} \text{FD}_{kt}$, where $\text{FD}_{kt} = \frac{\sum_d D_{dkt}}{Y_{k,t_0}}$. It combines information on foreign demand D_{dkt} of partners d and on industry specialization in China, where k indexes the Harmonized System 2-digit products (96 products). Output (Y_k) and local labor shares $s_{ck} = \frac{L_{ck}}{\sum_c L_{ck}}$ of prefecture c are calculated using ASIF Chinese firm-level data for the year 2009 (i.e., one year before the first wave of the CFPS).[49]

The demand expressed by China's foreign partner countries at the industry level is estimated from a structural gravity equation (Head and Mayer 2014):

$$\text{EX}_{odkt} = S_{okt}\phi_{odkt}D_{dkt} = \underbrace{\frac{Y_{okt}}{\Pi_{okt}}}_{S_{okt}}\phi_{odkt}\underbrace{\frac{E_{dkt}}{P_{dkt}}}_{D_{dkt}}, \tag{S3.1}$$

where EX_{odkt} denotes the bilateral export flow of product k from the origin country o to destination country d in year t. The variable ϕ_{odkt} is an inverse measure of bilateral trade barriers and reflects the

47 In 2010, 1 indicates healthy, 2 fairly healthy, 3 relatively unhealthy, 4 unhealthy, and 5 very unhealthy. From 2012 onwards, 1 refers to excellent, 2 to very good health, 3 to good, 4 to fair, and 5 to poor health.

48 Income variables appear in nominal terms. Province-year fixed effects in our regressions control for different developments in prices and living costs across provinces.

49 The match between Chinese CIC industry codes and HS codes is taken from Brandt et al. (2017).

accessibility of market d for the exporters of good k in location o. The supply capacity of the exporting country, S_{okt}, and the market capacity of the exporting country d, D_{dkt}, capture all the elements that make exporter o a competitive exporter of good k and partner d an attractive destination for good k. More precisely, the demand factor D_{dkt} depends on destination location d's total expenditure on good k, E_{dkt}, and the prevailing price index on market d for good k, P_{dkt}. The supply capacity, S_{okt} reflects production capacity (Y) and price competitiveness (Π) for origin location o.

Following Redding and Venables (2004), we obtain the demand factors D_{dkt} from equation (S3.1) estimated in logs. This is equation (2) in the main text:

$$\ln \mathrm{EX}_{odkt} = \ln S_{okt} + \ln \phi_{odkt} + \ln D_{dkt} + u_{odkt},$$

where u_{odkt} is an error term. We proxy ϕ_{odkt} by a vector of standard determinants of bilateral trade costs: $\phi_{odk} = [(d_{od})^{\alpha_k^1}(B_{od})^{\alpha_k^2}]$, where d_{od} is the bilateral distance between o and d and B_{od} is a dummy indicating whether trading partners share a common border or not.[50] We allow the coefficients of these two variables to vary by industry to take into account sectoral differences in sensitivity to these costs. The log of importer market capacity ($\ln D_{dkt}$) and the log of exporter supply capacity ($\ln S_{okt}$) are captured by importer-product-year and exporter-product-year fixed effects.

We take the exponential of the estimated importer market capacity ($\ln \widehat{D_{dkt}}$) and, for each industry and year, we sum over all foreign countries that declare non-zero imports from China for this industry and year. This term is then scaled by the value of Chinese production for this industry in 2009 to obtain FD_{kt}, which enters the construction of ExpOpp_{ct} as defined in equation (1) in the main text.

Trade data and bilateral trade cost measures come from BACI, the World trade database developed by CEPII (Gaulier and Zignago 2010).

Import Competition. We follow a similar procedure to that used for export opportunities to capture import competition from the supply capacity (S_{odkt}) terms in equation (2). The variable called $\mathrm{ImpComp}_{ct}$ is calculated using the same labor shares of each Chinese prefecture to weigh the sum of exporter fixed effects (divided by industry output) as in equation (1). We construct two separate variables for low- and high-income partners respectively.

Export Opportunities: Descriptive Statistics and Correlation with Actual Exports. Summary statistics of our export opportunity and import competition variables are found in the lower panel of table A.1. Column 1 of table A.3 shows the correlation between the log of export opportunity and the log of exports for the three years (2010, 2012, and 2014) for which we have city-level export data, controlling for city and year fixed effects.[51] We control also for the two import competition variables as imports are generally correlated with exports.

The positive correlation between exports and our shift-share variable is robust to controlling for other macroeconomic controls (column 2) and relying on first differencing while adding province-year fixed effects (column 3). The correlation between exports and export opportunities holds in particular when both variables are expressed in logarithm, which mitigates the impact of outliers.

To address the concern over missing local export data from 2016, the last three columns of table A.3 report the correlation between our ExpOpp measure and an approximation of prefecture-level exports, which we label here "predicted exports." Predicted exports are constructed by allocating national exports of industry k and year t to the prefectures on the basis of each prefecture c's respective share in Chinese exports of industry k in the base year 2009: $\widehat{\mathrm{Exports}}_{ct} = \sum_k \frac{\mathrm{Exports}_{ck,2009}}{\mathrm{Exports}_{k,2009}} \mathrm{Exports}_{k,t}$.[52]

50 Distance between exporters and importers is defined as the great circle distance between the main cities of the two countries.

51 Data on exports at the prefecture level are unfortunately not available to us after 2014.

52 We follow Bombardini and Li (2020) who face the same problem of missing local exports for parts of their sample period. See Section 5.2 for more details.

Table A.3. Exports and Export Opportunities

	(1)	(2)	(3)	(4)	(5)	(6)
	Observed city-level exports			Predicted city-level exports		
Dependent variable:	Ln exports		Δ Ln exports	Ln predicted exports		Δ Ln predicted exports
Ln $ExpOpp_{ct}$	3.287[b]	2.549[c]	–	0.690[b]	0.961[a]	–
	(1.240)	(1.349)		(0.247)	(0.323)	
Δ Ln $ExpOpp_{ct}$	–	–	3.022[c]	–	–	0.771[b]
			(1.638)			(0.357)
City controls:	–	Yes	–	–	Yes	–
City FE	Yes	Yes	–	Yes	Yes	–
Year FE	Yes	–	–	Yes	–	–
Province-year FE	–	Yes	Yes	–	Yes	Yes
Sample size	374	374	248	485	485	485
R^2	0.023	0.020	0.028	0.053	0.164	0.052

Source: Own estimations.

Note: **Sample**: The unit of observation is Chinese prefectures. The sample in columns 1–3 excludes 2016 due to missing export data for 2016. Columns 4–6 include all years (2010, 2012, 2014, and 2016). **City controls**: ln GDP per capita, ln primary GDP, ln secondary GDP, ln population, ln SO_2 per capita. Heteroskedasticity-robust standard errors clustered at the province level in parentheses. [a,b], and [c]indicate significance at the 1 percent, 5 percent, and 10 percent confidence levels.

Table A.4. Alternative Export Opportunities Measures (Ordered Logit)

	(1)	(2)	(3)	(4)
Dependent variable:	Self-reported life satisfaction (1–5)			
Indicator:	Alternative to $s_{ck,\,2009}$		Alternative to $Y_{k,\,2009}$	
	$s_{ck,\,2007}$	$y_{ck,\,2009}/y_{c,\,2009}$	$L_{k,\,2009}$	None
Alternative Ln $ExpOpp_{ct}$	2.312[a]	1.230[a]	1.633[a]	1.664[b]
	(0.798)	(0.453)	(0.598)	(0.818)
Controls	Individual and city level controls			
Fixed effects	Individual and province-year fixed effects			

Source: Own estimations.

Note: **Sample**: 71,624 observations. Individuals of working age (men aged 20–60, women aged 20–55). **Time-varying individual controls**: ln age, ln age squared, having a partner, number of children, education, having a job, local hukou registration, urban location, migrant, CPC membership. **Time-varying city controls**: ln GDP per capita, ln primary GDP, ln secondary GDP, ln population, ln SO_2 per capita, and ln import competition. Marginal effects of ordered logit estimates are reported. Heteroskedasticity-robust standard errors clustered at the city level in parentheses. [a,b], and [c]indicate significance at the 1 percent, 5 percent, and 10 percent confidence levels.

Columns 4 to 6 display a positive and significant correlation between (the change in) export opportunities and (the change in) predicted exports, suggesting that our shift-share indicator captures well the heterogeneity of exports across China.

A.4. Additional Robustness Checks

Alternative Export Opportunities Indicators. Table A.4 shows results relying on alternative measures of export opportunities to check that our results are not just due to the specific data we use to calculate our key explanatory variable $ExpOpp_{ct}$.

The first two columns use different shares (s_{ck,t_0}) to allocate sectoral export demand at the locality level. Column 1 uses industry local labor shares for the year 2007 instead of 2009. Column 2 uses local industry output shares. Results are similar to those of our benchmark (column 5 of table 1). In columns 3 and 4, we use alternative measures Y_{k,t_0} to scale the industry-level foreign-demand shock, $FD_{kt} = \frac{\sum_d D_{dkt}}{Y_{k,t_0}}$. In our benchmark export opportunities indicator, the denominator is total Chinese output in industry k in 2009. In column 3, we use instead the total number of workers in China in industry k. In column 4, we

Table A.5. Cluster on Similarity Index (Ordered Logit)

	(1)	(2)
Dependent variable:	Self-reported life satisfaction (1–5)	
Ln $ExpOpp_{ct}$	2.224[a]	2.224[a]
	(0.501)	(0.530)
Health $status_{it}$	0.390[a]	0.390[a]
	(0.030)	(0.032)
Ln family income pc_{ht}	0.046[a]	0.046[a]
	(0.010)	(0.011)
Controls	Individual and city level controls	
Fixed effects	Individual and province-year fixed effects	

Source: Own estimations.

Note: **Sample**: 71,624 observations. Individuals of working age (men aged 20–60, women aged 20–55). **Time-varying individual controls**: ln age, ln age squared, having a partner, number of children, education, having a job, local hukou registration, urban location, migrant, CPC membership. **Time-varying city controls**: ln GDP per capita, ln primary GDP, ln secondary GDP, ln population, ln SO_2 per capita, and ln import competition. Marginal effects of ordered logit estimates are reported. Column 1: Standard errors clustered at similarity index I. Column 2: Standard errors clustered at similarity index II. [a,b], and [c] indicate significance at the 1 percent, 5 percent, and 10 percent confidence levels.

do not scale the demand shock by any industry-specific component. Results remain highly similar even though the coefficients are slightly lower.

Overall, we can conclude that our main results are not dependent on the choices made for weighting and normalization in the construction of our export opportunities indicator.

Robustness: Statistical Inference. To tackle concerns about statistical inference, we construct alternative clusters based on the similarity of the prefectures' economic structure. For each prefecture i, we calculate an index of the similarity of its initial vector of industry-level employment shares s_{ik,t_0} to that of each of the 30 provincial capitals j. The index we use is based on Finger and Kreinin (1979) as in Campante et al. (2023):

$$\text{Similarity}_{ij} = \sum_k \min\{s_{ik,t_0}, s_{jk,t_0}\}.$$

By construction, the index ranges between 0 (when i and j have identical economic structures) and 1 (when i's and j's employment patterns are totally dissimilar). In table A.5, standard errors are clustered according to the specialization-similarity group to which the prefecture belongs. In column 1 we assign each prefecture to a similarity group corresponding to the province with which its employment structure is most similar. In column 2 we modify how the similarity groups are constructed to ensure that there is no overlap in the province-level clusters and the similarity groups: each prefecture is assigned to the province (other than its own) with which its similarity index is highest. Standard errors do not differ much from those in our baseline results, suggesting that the statistical inference we draw in our baseline individual-level regressions are not downward biased.

Supplementary Online Appendix

Is There a Bright Side to the China Syndrome? Rising Export Opportunities and Life Satisfaction in China

Matthieu Crozet, Laura Hering, and Sandra Poncet

S.1. Attrition and Self-Selection

In this section of the supplementary online appendix we address a possible bias of our main results due to attrition or self-selection. The CFPS survey seeks to follow individuals over time even if they change their place of residence. However, the information needed to identify the prefecture corresponding to this new residence and to associate it with the export opportunities explanatory variable is only available if it is one of the prefectures covered by the 2010 CFPS survey or if it is one of the four province-level cities (Beijing, Tianjin, Shanghai, and Chongqing).

The attrition that results from the missing information on the new place of residence is likely to weaken our identification strategy. Indeed, if the individuals least likely to benefit from export opportunities are those most likely to move to another prefecture and disappear from the sample, this may lead to an upward bias in the estimated coefficient.

Table S.1 reports several tests that address this issue. The first three columns are for the baseline sample but add an interaction term between the export opportunity variable and a dummy variable indicating that the individual changed residence during the period. In column 1, the dummy *attrition* is equal to 1 for individuals who exit the sample before 2016. We wish to test whether early leavers react differently to changes in local export performance in the year prior to their exit from the survey. In column 2, we look specifically at movers, which are defined as individuals who change prefectures between survey waves. In most cases, the prefecture they move to is not known, so it is not possible to assign them a value for local export opportunities. The interaction between export opportunities and the dummy for movers informs the possibility that these individuals benefited relatively less from exports before their move. Column 3 follows a similar approach and interacts export opportunities with a dummy variable

Table S.1. Robustness Check: Attrition and Self-Selection of Migrants (Ordered Logit)

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable:	Life satisfaction					
Sample:	Original sample			Including migrants		
				I	II	III
Ln $ExpOpp_{ct}$	2.372[a]	2.294[a]	2.051[a]	1.806[a]	1.761[a]	1.803[a]
	(0.674)	(0.684)	(0.742)	(0.537)	(0.512)	(0.512)
× $Attrition_i$	−0.872	–	–	–	–	–
	(0.660)					
× Moved between $cities_i$	–	−1.142	–	–	–	–
		(1.213)				
× $Migrant_i$	–	–	1.113	–	–	–
			(1.029)			
Ln family income pc_{ht}	0.046[a]	0.046[a]	0.045[a]	0.046[a]	0.046[a]	0.046[a]
	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)
$Health\ status_{it}$	0.390[a]	0.390[a]	0.390[a]	0.389[a]	0.388[a]	0.391[a]
	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)	(0.022)
Controls	Individual and city level controls					
Fixed effects	Individual and province-year fixed effects					
Additional fixed effects				City	City	City
Sample size	71,624	71,624	71,624	71,956	72,434	73,316

Source: Own estimations.

Note: **Sample**: Individuals of working age (men aged 20–60, women aged 20–55). **Time-varying individual controls**: ln age, ln age squared, having a partner, number of children, education, having a job, local hukou registration, urban location, migrant, CPC membership. **Time-varying city controls**: ln GDP per capita, ln primary GDP, ln secondary GDP, ln population, ln SO_2 per capita, and ln import competition. Marginal effects of ordered logit estimates are reported. Heteroskedasticity-robust standard errors clustered at city of first place of residence of the individual in parentheses. [a,b], and [c]indicate significance at the 1 percent, 5 percent, and 10 percent confidence levels.

indicating whether the individual changed their living location while remaining in the same prefecture.[53] None of the coefficients in front of the interactions added in columns 1 to 3 are significant, which is reassuring: attrition or migration do not produce a selection bias that could influence our results.

The remaining columns of table S.1 add to our database the cross-city migrants we excluded from the benchmark sample. These specifications add city fixed effects in addition to individual fixed effects to capture differences in time-invariant city characteristics that might affect life satisfaction when moving from one city to another. In column 4 we check that our results hold when we include the six or so individuals who move within the original set of the 162 counties included in the first survey wave in 2010.

In column 5 we further add individuals whose county of residence is unknown but who have migrated to one of the four single-city provinces: Beijing, Tianjin, Shanghai, or Chongqing. In these two specifications we are able to assign a value for the export opportunities variable for the new place of residence. The last column (column 6) adds to the sample the set of individuals who have moved to another unidentified city and have their place of residence arbitrarily assigned to their family of origin. The estimates are very consistent across all three columns and match the baseline estimates of table 3. This confirms, once again, that the inability of CFPS surveys to adequately track movers does not compromise our main results.

S.2. Robustness: Industry Level Equivalence and Balance Tests

In this section we consider additional checks that are proposed by recent work on shift-share approaches to check the exogeneity of the industry-level foreign-demand components of the ExpOpp indicator. Even though our approach deviates from the conventional shift-share designs as we use the logarithm of ExpOpp, the fact that we find that the FD_{kt} components (in equation (1) of the manuscript) are "as good as randomly assigned" to Chinese prefectures strengthens our confidence in the reliability of our results.

The validity of our shift-share approach relies on the assumption of exogeneity of the industry-level "shocks", in our case the industry-level foreign demand FD_{kt}. These shocks must be as good as random across industries. Borusyak, Hull, and Jaravel (2022) propose to test the shock balance with respect to various regional characteristics. Tests are developed following the observation that, in a specification where the shift-share enters in level and the estimator is OLS or 2SLS applied on a cardinal explained variable, the estimated effect of the shift-share arises from variation across industry-level shocks rather than variation across observations. We follow the logic of the tests proposed by Borusyak, Hull, and Jaravel (2022), although our specification introduces the shift-share variable in logarithm and uses an ordered logit due to the ordinal dimension of our variable of interest, life satisfaction.

Borusyak, Hull, and Jaravel (2022) show that if Y is the outcome variable of interest and X the shift-share indicator (computed as $X_{ct} = \sum_k s_{ck}\, g_k$, where s_{ck} is the share measuring the location-level exposure to the industry-level shock g_k), the estimated effect of X on Y in the baseline regression using a control vector W is identical to the second-stage coefficient from the following regression that uses the shocks g_k as the instrument and is weighted by average shock exposure $s_k = \sum_c s_{ck}$:

$$\bar{Y}_k^{\perp} = \alpha + \beta \bar{X}_k^{\perp} + \epsilon_k, \tag{S.1}$$

where $Y_k^{\perp} = \frac{\sum_c s_{ck} Y_c^{\perp}}{\sum_c s_{ck}}$ and $X_k^{\perp} = \frac{\sum_c s_{ck} X_c^{\perp}}{\sum_c s_{ck}}$, and $Y_c^{\perp}$ and $X_c^{\perp}$ denote respectively the residualized outcome variables of Y and shift-share indicator X after their projection on the control vector W of the baseline specification.

Statistical Inference. The industry-level analysis of equation (S.1) proposed by Borusyak, Hull, and Jaravel (2022) also has the advantage of solving a statistical inference problem in shift-share analyses due

53 Here we are interested in people who report living in a different place from their hukou registration. Living in a different place from the place of hukou registration suggests that these individuals are only temporarily settled in their current place of residence or have recently moved.

Table S.2. Individual vs. Industry-Level Analysis

Dependent variable:	(1) Life satisfaction$_{it}$ individual-level regression	(2) Life satisfaction$^{R}_{kt}$ industry-level regression
ExpOpp$_{ct}$	0.092[a]	–
	(0.035)	
ExpOpp$^{R}_{kt}$	–	0.092[a]
		(0.029)
Sample size	71,624	368
R^2	0.541	0.047

Source: Own estimations.

Note: **Column 1**: The sample and included variables are the same as in column 5 in table 1, but ExpOpp and ImpComp variables are in levels. Heteroskedasticity-robust standard errors clustered at city level in parentheses. **Column 2**: The sample is a four-year panel of 92 industries. Life satisfaction and ExpOpp are residualized with all controls from the respective specifications of column 5 in table 1. Industry-weighted averages are constructed using $s_{ck}/\sum_c s_{ck}$ as weights, where s_{ck} is the city c's employment share in industry k in 2009. The regression is weighted by the average industry exposure. Heteroskedasticity-robust standard errors clustered at HS1 sector level in parentheses. [a,b], and [c] indicate significance at the 1 percent, 5 percent, and 10 percent confidence levels.

to the fact that observations with similar exposure shares are likely to have correlated residuals (Adão, Kolesár, and Morales 2019). In our baseline analysis of individual life satisfaction, we cluster standard errors at the prefecture level. Results are also robust to clustering at the province level, which allows for correlation of shocks between prefectures of a given province. However, this may not be sufficient in the case of spatial correlation of residuals due to similar industrial composition of prefectures belonging to different provinces. Borusyak, Hull, and Jaravel (2022) show that the analogous industry-level analysis to our baseline individual regressions does not suffer from this inference problem and delivers consistent standard errors.

As explained earlier, the industry-level analysis is conducted on the shift-share indicator introduced in level and not in log, and hence corresponds to the results reported in column 1 of table S.2, which reproduces our baseline specification of column 5 in table 1 in OLS with ExpOpp$_{ct}$ introduced in level. Column 2 of table S.2 reports the industry-level analysis, clustering the standard errors at the one-digit HS level, which accommodates the possibility of unobserved correlated shocks across products within a broad sector. As expected, columns 1 and 2 provide the exact same point estimates for the effects of export opportunities on life satisfaction. Crucially, they also report similar statistical inference at the 1 percent confidence level. This is reassuring that spatial correlation of residuals between prefectures sharing similar industrial composition but belonging to distinct provinces is unlikely to bias the statistical inference of our baseline results.

Pre-period Balance Tests. We rely also on industry-level regressions to further check the assumption that our industry-level shocks g_k are as good as random. If that is indeed the case, these shocks should be uncorrelated with industry characteristics and pre-shocks weighted sums of outcomes as highlighted by Borusyak, Hull, and Jaravel (2022). In our context, this assumption could be violated if, say, foreign demand was higher in industries that happen to be particularly developed in prefectures with certain baseline characteristics that also directly promote well-being. We consider two types of baseline characteristics in 2010 that may be correlated with foreign demand in a particular industry: (a) prefecture-level variables, namely GDP per capita, export-to-GDP ratio, primary and secondary sector GDP, population, and SO_2 emissions per capita and (b) individual outcomes (life satisfaction, health score, and log of per capita household income) averaged at the prefecture level. Table S.3 reports the balance checks on these variables. We use again equation (S.1) at the industry level, where Y corresponds to the various location-level characteristics that could be possible confounding factors, as well as pre-period values of the main

Table S.3. Balance Checks

	(1)	(2)
Coefficient of	Industry-year specific export demand (FD_{kt})	
	Coef.	Std. dev.
Dependent variables:		
Life satisfaction$_{k,\,2010}$	−0.038	(0.070)
Health status$_{k,\,2010}$	0.013	(0.098)
Ln family income pc$_{k,\,2010}$	0.063	(0.163)
Ln GDP pc$_{k,\,2010}$	−0.328	(0.195)
Ln primary GDP$_{k,\,2010}$	−0.030	(0.172)
Ln secondary GDP$_{k,\,2010}$	−0.553	(0.268)^{c}
Ln pop$_{k,\,2010}$	−0.014	(0.043)
Ln SO_2 pc$_{k,\,2010}$	−0.061	(0.399)
Ln export/GDP$_{k,\,2010}$	0.000	(0.000)

Source: Own estimations.

Note: **Sample**: 92 industries × 4 years (2010, 2012, 2014, and 2016) = 368 observations. Industry-weighted averages are constructed using $s_{ck}/\sum_c s_{ck}$ as weights, where s_{ck} is city c's employment share in industry k in 2009. All regressions are weighted by the average industry exposure. Heteroskedasticity-robust standard errors clustered at HS1 sector level in parentheses. ^{a,b}, and ^{c}indicate significance at the 1 percent, 5 percent, and 10 percent confidence levels.

outcomes of interest.[54] We regress the constructed industry variables for 2010 on industry foreign demands FD_{kt} for the years 2010, 2012, 2014, and 2016 and year fixed effects, using the average exposure variable $s_k = \sum_c s_{ck}$ as regression weights.

The balance test results in table S.3 are also a useful guide for the choice of control variables in the baseline equation. They suggest that the industry-level foreign demands (in 2012, 2014, and 2016) are generally statistically uncorrelated with the prefecture characteristics and initial average individual outcomes (life satisfaction, health, and family income), which is consistent with our identification assumption. Only foreign demand tends to be larger in prefectures that are initially having a larger share of manufacturing in total GDP, which justifies that we control for this dimension in all our individual-level regressions. From these results we conclude that industry foreign demands FD_{kt} can be seen to be as good as randomly assigned to Chinese prefectures, implying that, weighted by s_k and conditional on controls, there should be no correlation between unobservables ϕ_c and industry-specific foreign demand FD_k.

S.3. Falsification Figure and Additional Tables on OLS and full controls

54 For these regressions, we first construct for the period 2010–2016 the industry-level prefecture characteristics $Y_{kt}^{\perp} = \frac{s_{ck} Y_{ct}^{\perp}}{\sum_c s_{ck}}$, where $Y_{ct}^{\perp}$ are the prefecture characteristics residualized by prefecture and year fixed effects.

Table S.4. Export Opportunities and Life Satisfaction: OLS Results Corresponding to Table 1

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable:	Self-reported life satisfaction (low = 1 to high = 5)					
	Working-age population				*Benchmark*	All
Ln ExpOpp$_{ct}$	0.712^{b}	0.901^{a}	0.701^{b}	0.885^{a}	1.072^{a}	0.986^{b}
	(0.328)	(0.326)	(0.330)	(0.327)	(0.319)	(0.390)
Ln GDP pc$_{ct}$	–	−0.308	–	−0.293	−0.357^{c}	−0.198
		(0.191)		(0.189)	(0.190)	(0.205)
ln primary GDP$_{ct}$	–	0.061	–	0.060	0.069	0.095
		(0.130)		(0.130)	(0.129)	(0.131)
ln secondary GDP$_{ct}$	–	0.109	–	0.106	0.117	0.105
		(0.111)		(0.111)	(0.110)	(0.120)
Ln pop$_{ct}$	–	−0.287	–	−0.267	−0.345^{c}	−0.260
		(0.193)		(0.191)	(0.200)	(0.221)
Ln SO_2 pc$_{ct}$	–	0.041	–	0.042	0.041	0.040^{c}
		(0.027)		(0.027)	(0.026)	(0.022)
Ln ImpComp$_{ct}$ (HI)	–	0.582^{c}	–	0.598^{b}	0.600^{b}	0.586^{b}
		(0.301)		(0.301)	(0.292)	(0.291)
Ln ImpComp$_{ct}$ (LI)	–	0.045	–	0.039	0.044	−0.024
		(0.107)		(0.107)	(0.111)	(0.126)
Ln family income pc$_{ht}$	–	–	–	–	0.022^{a}	0.021^{a}
					(0.005)	(0.005)
Health status$_{it}$	–	–	–	–	0.185^{a}	0.172^{a}
					(0.009)	(0.008)
Individual controls	Age		All individual controls			
Fixed effects	Individual and province-year fixed effects					
R^2	0.001	0.002	0.003	0.003	0.015	0.015

Source: Own estimations.

Note:**Sample**: Columns 1–5: 71,624 observations. Individuals of working age (men aged 20–60, women aged 20–55). Column 6: 117,163 observations. All individuals. **Time-varying individual controls**: ln age, ln age squared, having a partner, number of children, education, having a job, local hukou registration, urban location, migrant, CPC membership. Marginal effects of ordered logit estimates are reported. Heteroskedasticity-robust standard errors clustered at the city level in parentheses. ^{a,b}, and ^{c}indicate significance at the 1 percent, 5 percent, and 10 percent confidence levels.

Table S.5. Export Opportunities and Life Satisfaction (Ordered Logit): Full Results Corresponding to Table 1

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable:	Self-reported life satisfaction (low = 1 to high = 5)					
Sample:	Working-age population				Benchmark	All
Ln $ExpOpp_{ct}$	1.424[b]	1.865[a]	1.410[b]	1.848[a]	2.224[a]	2.003[b]
	(0.686)	(0.699)	(0.692)	(0.703)	(0.691)	(0.828)
Ln GDP pc_{ct}	–	−0.673	–	−0.659	−0.786[c]	−0.414
		(0.426)		(0.418)	(0.436)	(0.461)
ln primary GDP_{ct}	–	0.137	–	0.128	0.150	0.182
		(0.280)		(0.282)	(0.278)	(0.278)
ln secondary GDP_{ct}	–	0.230	–	0.235	0.261	0.212
		(0.244)		(0.243)	(0.249)	(0.265)
Ln pop_{ct}	–	−0.671	–	−0.635	−0.792[c]	−0.574
		(0.440)		(0.434)	(0.465)	(0.497)
Ln SO_2 pc_{ct}	–	0.098[c]	–	0.099[c]	0.098[c]	0.090[c]
		(0.053)		(0.053)	(0.051)	(0.047)
Ln $ImpComp_{ct}$ (HI)	–	1.233[b]	–	1.270[b]	1.300[b]	1.238[b]
		(0.627)		(0.627)	(0.612)	(0.605)
Ln $ImpComp_{ct}$ (LI)	–	0.088	–	0.075	0.084	−0.058
		(0.209)		(0.209)	(0.218)	(0.255)
Ln age_{it}	16.127	15.982	3.960	3.708	5.862	−4.959
	(12.588)	(12.583)	(13.004)	(12.987)	(13.097)	(5.078)
Ln age^2_{it}	−3.908	−3.881	−1.705	−1.663	−2.060	0.094
	(2.474)	(2.475)	(2.542)	(2.540)	(2.563)	(1.011)
Ln family income pc_{ht}	–	–	–	–	0.046[a]	0.045[a]
					(0.013)	(0.011)
Health $status_{it}$	–	–	–	–	0.390[a]	0.369[a]
					(0.021)	(0.019)
Has job_{it}	–	–	0.009	0.011	−0.014	0.038
			(0.035)	(0.035)	(0.036)	(0.025)
$Migrant_{it}$	–	–	−0.058	−0.054	−0.043	−0.022
			(0.081)	(0.081)	(0.081)	(0.061)
In $couple_{it}$	–	–	0.448[a]	0.448[a]	0.458[a]	0.319[a]
			(0.066)	(0.066)	(0.066)	(0.047)
Nb $children_{it}$	–	–	−0.018	−0.015	−0.003	−0.004
			(0.030)	(0.030)	(0.030)	(0.027)
$Urban_{it}$	–	–	−0.084	−0.093	−0.096	−0.102
			(0.099)	(0.098)	(0.095)	(0.077)
CPC $member_{it}$	–	–	0.160	0.160	0.166	0.146[c]
			(0.104)	(0.105)	(0.105)	(0.079)
Urban $hukou_{it}$	–	–	−0.003	−0.005	−0.006	0.027
			(0.075)	(0.075)	(0.074)	(0.069)
Edu $level_{it}$	–	–	0.044	0.043	0.036	0.047[c]
			(0.037)	(0.037)	(0.037)	(0.027)
Fixed effects	Individual and province-year fixed effects					

Source: Own estimations.

Note: **Sample**: Columns 1–5: 71,624 observations. Individuals of working age (men aged 20–60, women aged 20–55). Column 6: 117,163 observations. All individuals. Marginal effects of ordered logit estimates are reported. Heteroskedasticity-robust standard errors clustered at the city level in parentheses. [a,b], and [c]indicate significance at the 1 percent, 5 percent, and 10 percent confidence levels.

Table S.6. Physical and Mental Health (Ordered Logit): Full Results Corresponding to Table 2

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Sample:				Working age			All
Dependent variable:	Health	Depressed		Health	Depressed		Health
	(1–3)	(1–5)		(1–3)	(1–5)		(1–3)
Ln ExpOpp$_{ct}$	−3.528^{a}	0.746	0.326	−4.196^{a}	0.548	0.027	−3.475^{a}
	(1.061)	(1.090)	(1.020)	(1.091)	(1.329)	(1.256)	(0.997)
Ln GDP pc$_{ct}$	–	–	–	1.081	−0.189	−0.045	0.308
				(0.961)	(0.707)	(0.702)	(0.844)
ln primary GDP$_{ct}$	–	–	–	−0.261	0.286	0.286	−0.100
				(0.347)	(0.364)	(0.362)	(0.314)
ln secondary GDP$_{ct}$	–	–	–	−0.084	0.024	−0.012	0.298
				(0.479)	(0.424)	(0.420)	(0.421)
Ln pop$_{ct}$	–	–	–	1.491	0.397	0.566	0.539
				(1.023)	(0.714)	(0.731)	(0.873)
Ln SO_2 pc$_{ct}$	–	–	–	0.087	−0.032	−0.023	0.072
				(0.055)	(0.067)	(0.066)	(0.049)
Ln ImpComp$_{ct}$ (HI)	–	–	–	0.318	−2.001^{b}	−1.986^{b}	0.157
				(0.946)	(1.003)	(0.990)	(0.819)
Ln ImpComp$_{ct}$ (LI)	–	–	–	−0.072	0.491	0.505	0.091
				(0.366)	(0.385)	(0.384)	(0.306)
Ln age$_{it}$	−31.922^{b}	14.843	12.923	−27.210^{c}	20.757^{c}	19.263	12.295^{b}
	(13.948)	(11.875)	(12.075)	(14.516)	(12.334)	(12.375)	(5.854)
Ln age$^2_{it}$	5.454^{b}	−3.027	−2.724	4.590	−4.133^{c}	−3.913	−2.879^{b}
	(2.778)	(2.337)	(2.379)	(2.870)	(2.415)	(2.428)	(1.176)
Ln family income pc$_{ht}$	–	–	–	0.027^{c}	−0.014	−0.010	0.024^{b}
				(0.014)	(0.012)	(0.013)	(0.011)
Health status$_{it}$	–	–	−0.476^{a}	–	–	−0.475^{a}	–
			(0.024)			(0.024)	
Has job$_{it}$	–	–	–	0.192^{a}	−0.023	−0.000	0.171^{a}
				(0.046)	(0.038)	(0.039)	(0.033)
Migrant$_{it}$	–	–	–	−0.062	−0.027	−0.037	−0.120
				(0.091)	(0.071)	(0.073)	(0.077)
In couple$_{it}$	–	–	–	−0.064	−0.330^{a}	−0.333^{a}	−0.088^{c}
				(0.069)	(0.069)	(0.070)	(0.052)
Nb children$_{it}$	–	–	–	−0.041	0.058^{c}	0.055^{c}	−0.073^{b}
				(0.033)	(0.031)	(0.031)	(0.030)
Urban$_{it}$	–	–	–	0.093	0.086	0.102	0.077
				(0.108)	(0.082)	(0.084)	(0.091)
CPC member$_{it}$	–	–	–	−0.144	0.189^{b}	0.164^{c}	−0.081
				(0.101)	(0.088)	(0.087)	(0.080)
Urban hukou$_{it}$	–	–	–	−0.022	0.056	0.047	−0.073
				(0.090)	(0.065)	(0.064)	(0.070)
Edu level$_{it}$	–	–	–	0.032	−0.043	−0.037	−0.008
				(0.045)	(0.047)	(0.046)	(0.032)
Fixed effects	Individual and province-year fixed effects						

Source: Own estimations.

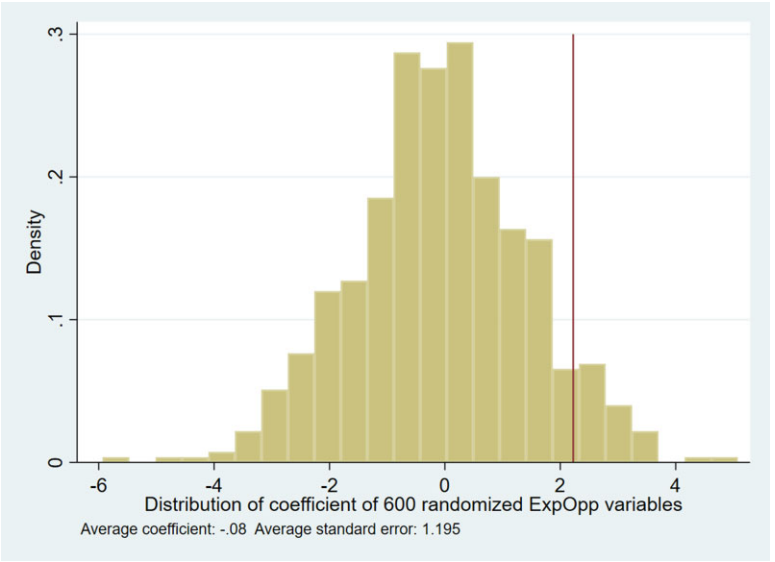
Note: **Sample**: Columns 1–6: 71,624 observations. Individuals of working age (men aged 20–60, women aged 20–55). Column 7: 117,163 observations. All individuals age 16 or older. Marginal effects of ordered logit estimates are reported. Heteroskedasticity-robust standard errors clustered at the city level in parentheses. ^{a,b}, and ^{c}indicate significance at the 1 percent, 5 percent, and 10 percent confidence levels.

Table S.7. Physical and Mental Health: OLS Results Corresponding to Table 2

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Sample:	Working age						All
Dependent variable:	Health	Depressed		Health	Depressed		Health
	(1–3)	(1–5)		(1–3)	(1–5)		(1–3)
Ln ExpOpp$_{ct}$	−0.963[a]	0.212	0.074	−1.137[a]	0.160	−0.001	−0.937[a]
	(0.301)	(0.320)	(0.302)	(0.299)	(0.390)	(0.374)	(0.264)
Ln family income pc$_{ht}$	–	–	–	0.006[c]	−0.004	−0.003	0.005[c]
				(0.003)	(0.004)	(0.004)	(0.003)
Health status$_{it}$	–	–	−0.141[a]	–	–	−0.141[a]	–
			(0.007)			(0.007)	
Controls	Age			All individual and city-level			
Fixed effects	Individual and province-year fixed effects						
R^2	0.001	0.001	0.015	0.003	0.002	0.017	0.003

Source: Own estimations. *Note*: **Sample**: Columns 1–6: 71,624 observations. Individuals of working age (men aged 20–60, women aged 20–55). Column 7: 117,163 observations. All individuals age 16 or older. **Time-varying individual controls**: ln age, ln age squared, having a partner, number of children, education, having a job, local hukou registration, urban location, migrant, CPC membership. **Time-varying city controls**: ln GDP per capita, ln primary GDP, ln secondary GDP, ln population, ln SO_2 per capita and ln import competition. Heteroskedasticity-robust standard errors clustered at the city level in parentheses. [a,b], and [c]indicate significance at the 1 percent, 5 percent, and 10 percent confidence levels.

Figure S.1. Distribution of Falsification Check Estimates



Source: Authors calculations.
Note: The estimates correspond to the specification of column 3 in table 8. The red line indicates the value of the estimate for our baseline