Is there a bright side to the China Syndrome? Rising export opportunities and life satisfaction in China*

Matthieu Crozet†, Laura Hering‡ and Sandra Poncet§

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Abstract

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. We 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. We show that these non-monetary gains are related to the individuals' professional life: export-related well-being gains exist only 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 family.

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†Université Paris-Saclay. E-mail: matthieu.crozet@universite-paris-saclay.fr.

‡Erasmus University, Rotterdam. E-mail: laura.hering@gmail.com.

§Paris School of Economics (University of Paris 1). E-mail: sandra.poncet@univ-paris1.fr.

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 thus 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% in 1990 to 15% of the world total today. China's export development led to a rise in the number of jobs and hours worked in the manufacturing sector (Ouyang and Yuan, 2022; Facchini et al., 2019), which has contributed to higher incomes and reduced malnutrition and improved health (Feng et al., 2021). However, due to the increased concentration of pollution 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 socio-economic 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 pre-

fectures 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). Since individuals assess their well-being not in terms of the absolute level of their living conditions but by comparing them to those of others,[2] studying the link between exports and well-being provides more credible information about popular support for export-oriented than studying the link between exports and income or other material conditions.

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 2012 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 from changes in foreign demand for imports.[3]

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.[4]

[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] The role of social comparisons explains for example why, in a context of high income growth like in China, people's well-being can remain stationary (Easterlin et al., 2012; Bartolini and Sarracino, 2015).

[3] We estimate foreign demand at the sectoral level using standard gravity trade models to remove the component of Chinese exports due to supply-side forces and trade frictions, to identify the specific component for each destination country. Then we project the latter component onto each prefecture on the basis of its pre-period exposure measured by the 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.

[4] We hence eliminate any problems resulting from unobserved time-invariant characteristics of the individ-

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 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% between 2010 and 2016) increases the odds of reporting a higher satisfaction category by 29%.

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.[5] 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.[6]

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 two key components of life satisfaction: job satisfaction and family life satisfaction. We find a positive and significant impact of export opportunities on job satisfaction, but no effect on other measures of subjective satisfaction,

ual (personality, physiological characteristics etc.) or the locality (climate, topography etc.). We furthermore 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).

[5]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.

[6]Note however that due to spillovers and inter-industry linkages within local labor markets, the effect is not expected to be limited only to workers active in the export industry.

such as satisfaction with family life or the local doctor, which are more directly related to personal elements distinct from local economic conditions. We interpret these contrasting results as evidence that the export-related well-being gains we observe (after shutting down the income and health channels) correspond to perceived current and future improvements in working conditions and career prospects.

Furthermore, 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).

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). Second, we present a variety of robustness analyses to ensure that our results are not driven by endogeneity or pre-trends. We perform the standard checks conducted by studies using a shift-share approach and verify that the results are not simply due to the initial pattern of industrial specialization, and in particular the case of a particularly influential sector (Goldsmith-Pinkham et al., 2020), and that changes in industry-specific foreign demand are as good as random (Borusyak et al., 2022). 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, because the new place of residence of individuals who change prefectures and move to a county outside the original CFPS sample cannot be identified. In Appendix A-2 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 (e.g. Bombardini and Li, 2020; Pierce and Schott, 2020; Hummels et al. 2016), marriage and fertility (Autor et al., 2019), housing

prices and provision of public goods (Feler and Senses, 2017), and political polarization (e.g. Dippel et al. 2022, Che et al. 2022, Autor et al., 2020, Blanchard et al., 2019). 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 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.[7] Our study is also related to Campante et al. (2022), who analyze the career prospects of local officials. Their study, also based on a shift-share approach, exploits the Chinese export slowdown after 2014 to show the political economy effects of exports.[8]

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 macro-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 et al., 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 et al., 2013, 2019, 2021; Autor et al., 2014; Acemoglu et al., 2016), which documents the negative consequences

[7] In unreported results, we confirm Li et al.'s (2019) 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.

[8] They find 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.

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 (2022), both of which focus on the link between China's increased access to the U.S. 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 in the various 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. We thus present a more complete and complex picture of the implications of China's exports for its population.

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 reports the findings on the effects of exports on health and income and Section 5 presents the baseline results on the implications for life satisfaction and 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. Last, Section 7 concludes.

2 Data sources and measures

2.1 CFPS data

We draw on data from the China Family Panel Studies (CFPS). The CFPS is a nationally representative longitudinal survey that interviews about 30,000 individuals per year in 2010, 2012, 2014 and 2016. The initial survey was conducted in 162 counties, which correspond to

126 different localities defined at the 4-digit level of the Chinese spatial-coding system. This is the prefecture level, the level below the province.[9] One of these prefectures is surveyed only in 2010 and we thus drop it from our sample. Our remaining 125 localities correspond to the four municipalities plus 121 prefectures. For ease of reading, we refer to these 125 localities as cities or prefectures.

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[10] 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% 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 remarkably 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 emotions and emotional shocks (Stone and Mackie, 2014).

For other survey items, we regret some changes in the questions asked and in the measure-

[9] China is divided into 4 municipalities (Beijing, Tianjin, Shanghai and Chongqing) and 27 provinces, which are further divided into 334 prefectures.

[10] We drop observations with missing or inconsistent information on our variables of interest.

ment scales used, which complicate our analysis. For instance, a question on job satisfaction is asked in the 2010, 2014 and 2016 questionnaires but not in 2012 while a question on satisfaction with family life is asked only 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. Further details about the data and summary statistics suggesting that the CFPS data give a consistent representation of the well-being of Chinese households are provided in Appendix A-1.

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-1 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 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 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, 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 rely on the exposure of Chinese prefectures to foreign demand.[11] Foreign demand is purged from the Chinese supply component and transport conditions that can simultaneously affect exports and individual well-being conditions. Our key indicator *ExpOpp* thus does not use actual prefecture-level export data and is computed so as to remove domestic demand and domestic supply shocks stemming from within China.

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}):

$$ExpOpp_{ct} = \sum_k s_{ck,t_0} \; FD_{kt}, \quad \text{with} \quad FD_{kt} = \frac{\sum_d D_{dkt}}{Y_{k,t_0}}, \tag{1}$$

where $s_{ckt_0} = \frac{L_{ck,t_0}}{L_{c,t_0}}$ is the share of industry k in prefecture c's total employment in the base year t_0= 2009. 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}). 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).

[11] 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 robustness checks 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.

We estimate the following gravity equation in log form:

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

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}. 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 the country d for the industry k all origins combined.

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 importer market capacity ($\ln D_{dkt}$) with importer-industry-year fixed effects. 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 et al., 2022). 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}). Further details and summary statistics are provided in Appendix A-3. Not surprisingly, Table A-3 in the Appendix confirms 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:

$$Y_{ct}^{i} = \beta \ \ln ExpOpp_{ct} + \gamma Z_{t}^{i} + \gamma W_{ct} + \lambda^{i} + \mu_{pt} + \epsilon_{ct}^{i}, \tag{3}$$

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 one to five. We will also study other dependent variables such as health status and income level. As linear estimators are not suited 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).[12]

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 prefecture.[13] Equation 3 also includes province-by-year dummies μ_{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 condi-

[12]Results in Table 5 and Appendix C-1 show that our key findings hold when using the OLS estimator instead of the ordered logit.

[13]To fit our ordered logit model with individual fixed effects, we rely on the "blow-up and cluster" (BUC) estimator introduced by Baetschmann et al. (2015).

tioning variables that vary over time, including respondent's age, marital status and number of children as proposed by the literature (Oswald, 1997; Knight et al., 2009; Knight and Gunatilaka, 2010; Easterlin et al., 2012).[14] The complete set of variables are provided in Table A-1.

The vector W_{ct} captures time-varying prefecture characteristics that are potential determinants of local well-being conditions. 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).[15] Finally, ϵ^i_{ct} is the usual error term. Standard errors are clustered at the prefecture level to account for the correlation between individuals within prefectures.[16]

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 macro controls as well as the province-year and individual fixed effects, the error term ϵ^i_{ct} 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

[14]Note that all time invariant individual characteristics such as gender are captured by the individual fixed effects.

[15]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 theatres). 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.

[16]Results are not sensitive to the choice of cluster and all conclusions hold if we cluster at the province level. We will also check 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 Adão et al. (2018).

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 B-4 we also report robustness checks to ensure that other time-varying local determinants of the outcome variable are uncorrelated with the industry-specific foreign demand observed at the national level (Borusyak et al., 2022).[17]

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 5.2 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.

4 Export opportunities on health and income

As a first step in our analysis of the link between exports and life satisfaction we focus on two important channels proposed by the literature through which export opportunities can be expected to affect individual life satisfaction: personal health and income.

As better export opportunities raise labor demand, this can lead to higher risk of illness and injuries due to increased working hours and tiredness. Hummels et al. (2016) 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

[17] In Section 5.2.3 and Appendix B, we present various related checks that have become standard in the shift-share literature. Notably, Table B-1 verifies that our baseline findings are unaffected by the specific weighting scheme used to compute our $ExpOpp_{ct}$. In Table 6 we also 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, 2020). Another set of checks presented in Table 6 takes the complementary view of the identification requirements and seeks to ensure that other time-varying prefecture-level determinants of the outcome variable do not correlate with initial local industry structure that is used for the weighting in the shift-share (Goldsmith-Pinkham et al., 2020).

international integration on the health of Chinese workers. While Feng et al. (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 et al. (2020). Instead, they highlight the negative health effects resulting from the increase in work hours that followed the reduction in imported input tariffs.

Table 1 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). Results are based on the ordered-logit estimator to account for the non-ordinal dimension of the dependent variable.[18] The results in Columns 1 to 3 correspond to the sample of working age individuals, defined as men aged 20-65 and women aged 20-55. The last three columns consider instead individuals younger or older than working age. As indicated in Section 3, regressions include numerous macroeconomic controls as well as province-year fixed effects, so as to account for general equilibrium effects. Notably our set of controls includes the SO_2 emissions per capita at the prefecture level to account for local air pollution, which however is not significant.

The results in Columns 1 and 4 reveal that greater export opportunities are associated with worsened perceived health, but the effect is much stronger for those of working age.[19] We can gauge the magnitude of the implied health effects using the odds-ratios interpretation of the coefficients. Using the coefficient of -4.196 from Column 1 and the mean change between 2010 and 2016 of our key variable of export opportunities reported in Table A-1, we can 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.[20]

The coefficient obtained for the non-working sub-sample is half as large and significant only at the 10% confidence level (Column 4). The observation of negative health impacts

[18]Full results of Table 1 are shown in Table C-1. Table C-2 verifies that the results are robust when using the OLS estimator instead of the ordered logit.

[19]The use of information about the fact that a person is of working age or not is obviously a second best due to the poor quality of the CFPS data on labor participation (see Section A-1). The lack of detailed information on the industry in which individuals work does not allow us to calculate individual exposure to exports.

[20]This is computed as $0.0358\times[e^{-4.196}\text{-}1]$.

Table 1: Physical and mental health (ordered logit)

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable:	Self-reported health status (1-3)	Depressed (1-5)		Self-reported health status (1-3)	Depressed (1-5)	
Sample:	Working age			Non working age		
Ln ExpOpp_{ct}	-4.196^a	0.182	-0.382	-2.248^c	1.731	1.388
	(1.090)	(1.271)	(1.198)	(1.248)	(1.211)	(1.198)
Ln Family income pc_{ht}	0.027^c	-0.017	-0.014	0.017	-0.001	0.003
	(0.014)	(0.013)	(0.013)	(0.015)	(0.016)	(0.016)
$\text{Health status}_{it}$			-0.493^a			-0.462^a
			(0.024)			(0.025)
Controls	Individual and city level controls					
Fixed effects	Individual and province-year fixed effects					
Observations	43,114	47,052	47,052	26,925	29,935	29,935
No. of individuals	13,120	14,403	14,403	8,214	9,224	9,224
No. of cities	125	125	125	125	125	125

Sample: Columns 1-3: Individuals of working age (men aged 20-60, women aged 20-55). Columns 4-6: Individuals not of working age (Men aged 16-20 and 60+, females aged 16-20 and 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 member. **Time-varying city controls:** ln GDP per capita, ln Primary GDP, ln Secondary GDP, ln Population, ln SO2 per capita and ln Import Competition. Marginal effects of ordered logit estimations are reported. Heteroskedasticity-robust standard errors clustered at city level in parentheses. ^{a}, ^{b} and ^{c} indicate significance at the 1%, 5% and 10% confidence levels.

of increased export opportunities primarily for working-age individuals suggests that there may be an effect through working conditions, not just through the amenities, omitted by the model, that are available to both working and non-working individuals (e.g., higher pollution, congestion of health services, etc.). This is consistent with Fan et al.'s (2020) finding of harmful health effects due to increased pace of work: rising exports tend to deteriorate perceived health due to more job-related injuries and overall tiredness.

In the remaining columns, we look at mental distress, which could rise following rapid export growth due to increased work pressure. We rely on a self-reported measure for depression. The questions on 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). Using this indicator, we do not find significant evidence of detrimental mental-health effects, regardless of whether we control for the physical health perception of individuals (Columns 3 and 6) or not (Columns 2 and 5).

Overall, our results suggesting detrimental physical (but no mental) health effects of in-

creased export opportunities are consistent with a scenario where greater foreign demand for local products leads to increased pace of work and deteriorated working conditions. In the absence of a countervailing mechanism, the measured negative effects of increased export opportunities on the health of Chinese workers are likely to imply that China's export growth has reduced life satisfaction in places most exposed to increased foreign demand.

Table 2 focuses on the income channel, i.e., that increased exports lead to higher incomes that translate into higher life satisfaction for local residents. 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 therefore aggregate the data at the household level. The set of controls is identical to that used in Table 1 except that the individual controls are replaced by household averages.[21]

As before, we differentiate the results according to the potential labor force participation of respondents. We use two alternative criteria to classify a household as "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% of its members of working age. We find a positive and significant impact of export opportunities on per capita family income for working-age households only. No effect is observed for other households suggesting that the monetary effects transit through the labor market. This result is consistent with a wage growth effect from exports (Hering and Poncet, 2010; Fu and Wu, 2013). In absence of reliable data on labor force participation of individuals and the number of working hours, it is however not possible to determine whether the income effect reflects a rise in hourly wage or more hours worked.[22]

[21] 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, we include the number of household members of working age.

[22] In unreported results, we also investigate the impact of export opportunities on the answers to the binary choice question of the survey "Do you have a job?". We do not find any significant impact, possibly because of the poor data quality as the question in 2010 excludes most agricultural workers (see Appendix A-1). Another explanation relates to the fact that only 3% 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) that are not affected by export opportunities.

Table 2: Export Opportunities and Family income

	(1)	(2)	(3)	(4)
Dependent variable:	Ln Family income (per capita)			
Sample:	Working Age Households		Non Working Age Households	
Ln ExpOpp_{ct}	1.086^c	1.321^c	-0.756	-0.909
	(0.640)	(0.680)	(1.168)	(1.009)
Av. health status_{ht}	0.045^c	0.060^b	0.066	-0.014
	(0.024)	(0.025)	(0.043)	(0.057)
Controls	Household and city controls			
Fixed effects	Household and province-year fixed effects			
Observations	28,005	29,017	8,983	5,387
No. of cities	125	125	125	125
R^2	0.581	0.586	0.624	0.678

Sample: Column 1: Household head of working age (male: 20-65, female: 20-55). Column 2: Households with more than 25% of members of working age. Column 3: Household head is not of working age. Column 4: Households with at most 25% of members of working age. **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 SO2 per capita and ln Import Competition. Heteroskedasticity-robust standard errors clustered at city level in parentheses. ^{a}, ^{b} and ^{c} indicate significance at the 1%, 5% and 10% confidence levels.

To gauge the magnitude of the implied effect we again consider the average change in export opportunities of 3.58% between 2010 and 2016 reported in Table A-1. The $\beta = 1.086$ point estimate from Column 1 corresponds to a 4% rise in family income, which represents about one-tenth of the average increase in income measured over the 6-year period in our sample (computed at 41.2%).

5 Effects of export opportunities on life satisfaction

This section looks at the possibility that export growth affects life satisfaction beyond the two channels of income and physical health highlighted above. The empirical approach is therefore based on a regression of the life satisfaction indicator of individuals on the export opportunity of their prefecture once their health and income are controlled for.

5.1 Baseline results of export opportunities on life satisfaction

Table 3 reports our benchmark results for Equation 3 looking at the impact of export opportunities on life satisfaction. We use the ordered logit estimator on the well-being score scaled between 1 (very dissatisfied) to 5 (very satisfied).[23] Similar to the analysis of the impact of exports on health and income, we explore the importance of labor force participation by conducting the estimates separately on working and non-working age individuals. Columns 1 through 6 focus on working-age individuals and progress to our baseline specification, which is then replicated in column 7 for the sample of non-working-age respondents. Individual fixed effects absorb time-invariant individual characteristics (gender, social and cultural background, education, etc.) so that the coefficients are estimated from intra-individual variations over time and capture the effect of a change in the individual's situation on his or her perceived life satisfaction.

To comprehensively assess the importance of local macroeconomic variables in self-reported life satisfaction we conduct three successive and complementary estimations. Column 1 begins with a very simple specification, which includes only our main variable of interest, export opportunities. Column 2 on the contrary excludes export opportunities but adds a range of other macroeconomic variables, notably the prefecture's GDP per capita. Column 3 includes all macroeconomic variables. From Column 4 onward individual determinants of the individual propensity to happiness are added.

In all specifications on the sample of working age individuals, the coefficient of our variable of interest, *ExpOpp*, is positive and significant. Its magnitude is also not sensitive to adding standard individual control variable.[24] Column 4 shows also the coefficient of family income on life satisfaction. As expected, better material conditions make people happier. However, the point estimate of 0.046 suggests a rather limited impact of income growth on life satisfaction.[25]Column 5 excludes family income but adds a proxy for individual health status, which emerges, as expected, as a particular important determinant of life satisfaction. Upgrading

[23]OLS estimates are reported in Table C-4.

[24]Table C-3 in Appendix C-1 shows full results, including the coefficients of all individual control variables.

[25]Using the point estimate from Column 6, we compute that the average change in family income between 2010 and 2016 (reported at 41.2% in Appendix Table A-1) raises the odds of life satisfaction to be in a higher category (versus all lower ones) by 1.93%. This is computed as $0.412 \times [e^{0.046}\text{-}1]$.

Table 3: Export Opportunities and Life satisfaction (ordered logit)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	Self-reported life satisfaction (1-5)						
Sample:	Working age pop.						Non working age
						benchmark	
Ln $ExpOpp_{ct}$	1.369^{b}		1.794^{a}	1.796^{b}	2.275^{a}	2.224^{a}	1.523
	(0.666)		(0.679)	(0.700)	(0.689)	(0.688)	(1.451)
Ln GDP pc_{ct}		-0.344	-0.678	-0.694^{c}	-0.753^{c}	-0.786^{c}	0.233
		(0.433)	(0.423)	(0.415)	(0.441)	(0.437)	(0.695)
ln Primary GDP_{ct}		0.130	0.137	0.109	0.168	0.150	0.222
		(0.277)	(0.277)	(0.280)	(0.279)	(0.277)	(0.378)
ln Secondary GDP_{ct}		0.087	0.225	0.259	0.240	0.261	0.128
		(0.258)	(0.240)	(0.242)	(0.250)	(0.249)	(0.391)
Ln Pop_{ct}		-0.412	-0.696	-0.671	-0.758	-0.792^{c}	-0.254
		(0.451)	(0.436)	(0.430)	(0.466)	(0.463)	(0.753)
Ln SO2 pc_{ct}		0.092^{c}	0.095^{c}	0.104^{b}	0.094^{c}	0.098^{c}	0.085
		(0.054)	(0.052)	(0.052)	(0.051)	(0.051)	(0.058)
Ln $ImpComp_{ct}$ (HI)		1.039	1.210^{c}	1.277^{b}	1.293^{b}	1.300^{b}	1.183
		(0.653)	(0.619)	(0.634)	(0.615)	(0.616)	(0.763)
Ln $ImpComp_{ct}$ (LI)		0.194	0.114	0.091	0.070	0.084	-0.381
		(0.220)	(0.213)	(0.209)	(0.218)	(0.218)	(0.377)
Ln Family income pc_{ht}				0.048^{a}		0.046^{a}	0.044^{a}
				(0.013)		(0.013)	(0.015)
Health $status_{it}$					0.391^{a}	0.390^{a}	0.337^{a}
					(0.021)	(0.021)	(0.030)
Individual Controls:	No	No	No	Yes	Yes	Yes	Yes
Fixed effects	Individual and province-year fixed effects						
Observations	54,717	54,717	54,717	54,717	54,717	54,717	34,984
No. of individuals	16,892	16,892	16,892	16,892	16,892	16,892	10,820
No. of cities	125	125	125	125	125	125	125

Sample: Columns 1-6: Individuals of working age (men aged 20-60, women aged 20-55). Column 7: Individuals not of working age (Men aged 16-20 and 60+, female aged 16-20 and 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 member. Marginal effects of ordered logit estimations are reported. Heteroskedasticity-robust standard errors clustered at city level in parentheses. ^{a}, ^{b} and ^{c} indicate significance at the 1%, 5% and 10% confidence levels.

to a higher category of health (i.e., from "poor" to "fair", or from "fair" to "good") raises the odds in favor of higher life satisfaction category by about 47% ($e^{0.39}$=1.477).

Comparing our benchmark estimate in Column 6 (which includes the full set of controls) with those in Columns 4 and 5 shows that the positive and significant coefficient of *ExpOpp* increases when income is not controlled for (Column 5) and decreases when health is not controlled for (Column 4). These results are consistent with the findings in Tables 1 and 2. They suggest a significant effect of export opportunities on two key determinants of life satisfaction: exports lead to higher income but poorer health.[26] The main result here is that export opportunities have a positive and significant impact on life satisfaction that goes beyond these income and health channels.

Using the point estimate from Column 6, we compute that the average change in export opportunities of 3.58% between 2010 and 2016 (see Appendix Table A-1) raises the odds of declaring a higher category of satisfaction (versus all lower scores) by 29.5%.[27] In contrast, Column 7 shows a lower and non significant coefficient for *ExpOpp*. The estimated impacts of income and health for the sub-sample of non-working-age individuals remain significant and of a similar magnitude to those for the working-age population. These contrasting results suggest that the well-being gains from exports we measure relate to the individuals' professional life and are not simply attributable to a particular bias affecting the subsample of working-age people.

5.2 Robustness checks

In this section, we demonstrate the robustness of our benchmark results reported in Column 6 of Table 3. We propose various alternative specifications that take into account the ordinal nature of our variable of interest as well as the identification problems described in Section 3.

[26] In unreported results we find that the point estimates for health and family income are not affected by the introduction of our variable of interest, *ExpOpp*.

[27] This is computed as $0.0358 \times [e^{2.224}\text{-}1]$.

Table 4: Alternative indicators for life satisfaction

	(1)	(2)	(3)	(4)
Dependent variable:	Agg. life satisf.	Dummy for (very) satisfied		
	scale 1-3	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}
	(0.731)	(1.358)	(0.880)	(1.095)
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			
Observations	47,166	7,955	39,759	26,366
No. of cities	125	125	125	125

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 member. **Time-varying city controls:** ln GDP per capita, ln Primary GDP, ln Secondary GDP, ln Population, ln SO2 per capita and ln Import Competition. Marginal effects of ordered logit estimations are reported. Heteroskedasticity-robust standard errors clustered at city level in parentheses. ^{a}, ^{b} and ^{c} indicate significance at the 1%, 5% and 10% confidence levels.

5.2.1 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 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.

5.2.2 Alternative specification IV and First-Difference

To evaluate the impact of exports on life satisfaction, our baseline specification relies on a reduced form regression, which regresses our outcome variable directly on the shift-share variable of export opportunity 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 findings 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.

Confronted 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 and use the shift-share variable as instrument. This 2SLS approach is not compatible with the ordered logit approach that is best suited to the ordinal nature of our life satisfaction indicator but we show in Table 5 that our message holds when we follow this strategy. We compute $\widehat{Exports}_{ct} = \sum_k \frac{\text{Exports}_{ck,2009}}{\text{Exports}_{k,2009}} \text{Exports}_{k,t}$, 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.[28] Column 1 of Table 5 reports the second-stage results of life satisfaction regressed on ln $\widehat{Exports}_{ct}$, where the instrumental variable is our shift-share variable, ln ExpOpp_{ct}.

The first stage results for the estimated coefficient of ln 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 first difference estimator

[28] Total Chinese exports at the HS2 industry level aggregation come from BACI (Gaulier and Zignago, 2010).

Table 5: Alternative estimators: IV and first differencing

	(1)	(2)	(3)	(4)
Dependent variable:	Life satisfaction		Δ Life satis.	
Estimator:	IV	OLS	IV	OLS
Ln $\text{ExpOpp}_{\text{ct}}$		1.072^{a}		
		(0.318)		
Ln $\widehat{\text{Exports}}_{ct}$	1.119^{b}			
	(0.523)			
Δ Ln $\text{ExpOpp}_{\text{ct}}$				1.054^{b}
				(0.482)
Δ Ln $\widehat{\text{Exports}}_{ct}$			1.163^{c}	
			(0.667)	
$\text{Health status}_{\text{it}}$	0.189^{a}	0.185^{a}		
	(0.010)	(0.009)		
Ln Family income pc_{ht}	0.023^{a}	0.022^{a}		
	(0.006)	(0.006)		
Δ $\text{Health status}_{\text{it}}$			0.176^{a}	0.170^{a}
			(0.010)	(0.010)
Δ Ln Family income pc_{ht}			0.011^{c}	0.008
			(0.006)	(0.006)
Observations	62,196	64,341	37,882	39,208
No. of Cities	122	125	122	125
R^2	0.540	0.541	0.086	0.087
β Ln $\text{ExpOpp}_{\text{ct}}$	0.953		0.994	
p-value	0.001		0.000	
F-stat	12.088		14.004	

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 member. **Time-varying city controls:** ln GDP per capita, ln Primary GDP, ln Secondary GDP, ln Population, ln SO2 per capita and ln Import Competition. Heteroskedasticity-robust standard errors clustered at city level in parentheses. ^{a}, ^{b} and ^{c} indicate significance at the 1%, 5% and 10% confidence levels.

as an alternative way of accounting for individual time-invariant characteristics, 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 because many individuals are not present in all years. 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, finding of similar results with both approaches suggests that endogeneity is not a key issue in our setting (Wooldridge, 2010).

5.2.3 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 relying on a shift-share approach. As discussed in Section 3, one of the standard concerns when using a shift-share indicator is that the initial industrial composition may be correlated with other unobserved local characteristics that also affect the main outcome of interest.

The first exercise we report in Panel A of Table 6 directly tackles the concern that our baseline results may be confounded by the prefecture-specific pre-trends that are correlated with initial industry shares. In Column 1, we augment the model of Column 6 of Table 3 by controlling for initial sectoral employment shares in the prefecture interacted with a time trend. To reduce the number of additional coefficients to estimate in the already demanding specification of the ordered logit with individual and province-year fixed effects, we aggregate the 92 HS2 industries in our sample into eight broad sectors.[29] The coefficient on ln ExpOpp_{ct} with these additional controls (none of them significant) is slightly lower but remains statistically significant at the 1% level. Column 2 adopts an even more demanding

[29]The sectors are (i) Animal Products & Vegetable Products; (ii) Foodstuffs; (iii) Mineral Products, Chemical & Plastics; (iv) Wood & Wood Products; (v) Textiles, Footwear & Leather; (vi) Metals, Stone and Pearls; (vii) Machinery, Vehicles and Precision instruments; and (viii) Furniture, Toys & Art.

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 next columns, we add controls for possible pre-trend sources.

Column 3 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. Columns 4 and 5 investigate this issue further by running a falsification test where we either add the future value of the variable $ExpOpp$ (Column 4) or use it as a replacement for its contemporary value (Column 5). 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.[30]

Finally, Column 6 of Table 6 (Panel A) attempts to control directly for a measure of 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. Following an approach proposed by Borusyak et al. (2022), we compute this non-randomness in exposure to exports by randomly permuting the true foreign demand observed at the product level, FD_{kt}, among the various products k of a broadly defined sector[31] and use the obtained random allocated foreign demands to construct a new ExpOpp indicator, $\mu(ExpOpp)$, following Equation 1.[32] This indicator is intended to capture the heterogeneity of world markets across major sectors, implying that the prefectures most specialized in sectors with high foreign demand systematically enjoy greater export opportunities, regardless of the contemporary demand received by individual products. We introduce

[30]In unreported results we also find that past export opportunities have little explanatory power for contemporaneous outcomes.

[31]We use the same 8 broad sectors as in Columns 1 to 3.

[32]We replicate this procedure 600 times and then compute the average over these 600 indicators. We then take this average in logarithm and add it to our specification in Column 6 of Table 6.

Table 6: Adding industry shares and export exposure (ordered logit)

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable:	Self-reported life satisfaction (1-5)					
Panel A: Pre-trends and anticipations						
	Employment shares × trend	Employment shares × year	Export sh. × year	Forward lag		non-random shock exposure
Ln ExpOpp_{ct}	1.946^{b}	1.638^{b}	2.268^{a}	2.274^{a}		1.928^{a}
	(0.760)	(0.782)	(0.700)	(0.653)		(0.730)
Ln ExpOpp_{ct+2}				-0.194	0.587	
				(0.937)	(1.002)	
Ln av. μ (ExpOpp)						2.379
						(2.120)
		(1)	(2)	(3)	(4)	
Panel B: Dropping one category at a time						
		Dropping HS2 industries		Dropping provinces		
		Min	Max	Min	Max	
Ln ExpOpp_{ct}		1.836^{a}	2.670^{a}	1.943^{a}	2.619^{a}	
		(0.693)	(1.024)	(0.685)	(0.684)	
Observations		54,717	54,717	50,344	49,915	
No. of cities		125	125	112	113	

Sample: Individuals of working age (men aged 20-60, women aged 20-55) . All columns in Panel A have 54,717 observations. **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 member. **Time-varying city controls:** ln GDP per capita, ln Primary GDP, ln Secondary GDP, ln Population, ln SO2 per capita and ln Import Competition. All regressions include individual and province-year fixed effects. Sectors in Columns 1 and 2 are (i) Animal Products & Vegetable Products; (ii) Foodstuffs; (iii) Mineral Products, Chemical & Plastics; (iv) Wood & Wood Products; (v) Textiles, Footwear & Leather; (vi) Metals, Stone and Pearls; (vii) Machinery, Vehicles and Precision instruments; and (viii) Furniture, Toys & Art. Marginal effects of ordered logit estimations are reported. Heteroskedasticity-robust standard errors clustered at city level in parentheses. ^{a}, ^{b} and ^{c} indicate significance at the 1%, 5% and 10% confidence levels.

this indicator alongside our export opportunities indicator to purge it of the demand for local exports received by prefectures because of their non-random exposure to foreign demand at the product level. Again, we see that only our variable of interest is significant, while the additional indicator, $\mu(ExpOpp)$, which allocates exports across industries in a random way, is not.

Columns 1 and 2 of Panel B of Table 6 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 et al. 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.

In Appendix B-2, we consider additional checks that are proposed by recent work on shift-share approaches and that run estimates at the level of the identifying variation, i.e. from equivalent industry-level regressions (Borusyak et al., 2022). Notably, these industry-level regressions test for exogeneity of the industry-level foreign demand components of the $ExpOpp$ indicator (i.e. that these are "as good as randomly assigned" to Chinese prefectures). We further verify that our individual-level results are robust under alternative clustering protocols that group prefectures according to their similarity in economic specialization (see Table B-3 in Appendix B-2).

Table 7: 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}	
	(1.170)	(2.057)	(1.010)	(0.874)	(0.720)	
Ln $ExpOpp_{ct} \times Agri_{i}$						1.226^{c}
						(0.691)
Ln $ExpOpp_{ct} \times Manuf_{i}$						2.255^{b}
						(1.145)
Ln $ExpOpp_{ct} \times Services_{i}$						1.395
						(0.931)
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)	(0.017)	(0.014)	(0.016)	(0.016)
Controls	Individual and city level controls					
Fixed effects	Individual and province-year fixed effects					
Observations	14,486	4,808	28,386	37,963	36,418	36,418
No. of individuals	4,804	1,761	8,703	11,588	12,364	12,364
No. of cities	125	125	125	125	125	125

Sample: Columns 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 member. **Time-varying city controls:** ln GDP per capita, ln Primary GDP, ln Secondary GDP, ln Population, ln SO2 per capita and ln Import Competition. Marginal effects of ordered logit estimations are reported. Heteroskedasticity-robust standard errors clustered at city level in parentheses. ^{a}, ^{b} and ^{c} indicate significance at the 1%, 5% and 10% confidence levels.

6 Channels of impact

The baseline findings reported in Table 3 suggest that there is a direct positive and significant link between exports and perceived quality of life that is specific to individuals of working age, goes beyond positive income effects, and exists 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.

6.1 The role of labor-market participation and choice of sector

Table 7 investigates in more detail the role of labor-market participation as a channel for well-being. 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 3 distinguish between working-age and non-working-age respondents, Table 7 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.[33] Column 1 includes only individuals who never report working. We observe a non-significant effect that holds in column 2 where also those who declare a personal income are excluded. No effect of export opportunities on life satisfaction is observed in these two samples. 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.

[33]Definition 1 simply uses the answer to the question "Do you have a job?". To overcome the fact that this question is not well answered in 2010, an alternative definition is used, under which, a person is also considered to be employed if he or she receives a personal income. This second definition on labor force participation gives a much more stable number of working individuals across years. See Appendix A-1 for the details on the choice and construction of the labor force participation indicator.

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 industry code (and thus declare having a job).[34] 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% level.

In Column 6, the export opportunity variable is interacted with dummies indicating the sector in which each individual participates.[35] We find that the effect of 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.[36] 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

Table 8 and Table 9 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 8 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 in 2010 (with many missing observations), 2014 and 2016. As an alternative, Column 2 considers the individuals' assessment of their confidence in

[34]There are 21 industry categories, among which 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 one code for 'other industries'.

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

[36]The effect should however also extend also to other local workers due to spillovers and interdependencies between sectors.

Table 8: Job satisfaction and Confidence in the future (ordered logit)

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable:	Job satisfaction	Confidence into future	Life satisfaction			
Ln $\text{ExpOpp}_{\text{ct}}$	3.663^{a}	1.940^{b}	2.252^{b}	1.762^{c}	1.323^{b}	0.256
	(1.338)	(0.950)	(1.057)	(1.033)	(0.651)	(0.985)
$\text{Job satisfaction}_{\text{it}}$				0.326^{a}		0.271^{a}
				(0.027)		(0.034)
$\text{Confidence}_{\text{it}}$					0.832^{a}	0.907^{a}
					(0.023)	(0.036)
$\text{Health status}_{\text{it}}$	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)	(0.021)	(0.020)	(0.014)	(0.022)
Controls	Individual and city level controls					
Fixed effects	Individual and province-year fixed effects					
Observations	18,399	52,622	20,029	20,029	54,605	20,005
No. of individuals	8,104	16,251	8,792	8,792	16,872	8,784
No. of cities	125	125	125	125	125	125

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 member. **Time-varying city controls:** ln GDP per capita, ln Primary GDP, ln Secondary GDP, ln Population, ln SO2 per capita and ln Import Competition. Marginal effects of ordered logit estimations are reported. Heteroskedasticity-robust standard errors clustered at city level in parentheses. ^{a}, ^{b} and ^{c} indicate significance at the 1%, 5% and 10% confidence levels.

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.

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 sample for which we have information on job satisfaction so as to confirm that our main result holds despite the reduced 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 export opportunities 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 9 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 the family life. Perception of family life quality is rated on the same scale of 1 to 5 as satisfaction with life in general[37] (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

[37]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.

Table 9: Other personal perceptions: satisfaction and trust (ordered logit)

	(1)	(2)	(3)	(4)
Dependent variable:	satisfaction with		trust in	
	family	medical service	parents	doctors
Ln $\text{ExpOpp}_{\text{ct}}$	2.663	0.072	1.329	1.388
	(2.781)	(0.967)	(0.973)	(1.985)
Ln Family income pc_{ht}	0.024	-0.017	0.001	-0.016
	(0.021)	(0.012)	(0.014)	(0.018)
$\text{Health status}_{\text{it}}$	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			
Observations	16,430	28,728	39,872	19,580
No. of individuals	8,215	10,782	15,133	7,348
No. of cities	124	125	125	125

Sample: Individuals of working age (men aged 20-60, women aged 20-55). Column 1: years 2012 and 2014. Column 2: 2010-2016. Columns 3 and 4: 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 member. **Time-varying city controls:** ln GDP per capita, ln Primary GDP, ln Secondary GDP, ln Population, ln SO2 per capita and ln Import Competition. Marginal effects of ordered logit estimations are reported. Heteroskedasticity-robust standard errors clustered at city level in parentheses. ^{a}, ^{b} and ^{c} indicate significance at the 1%, 5% and 10% confidence levels.

export opportunities variable is positive but not significant. The lack of impact of exports on family life satisfaction and trust into 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 Table 8 and Table 9 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 et al., 2016; Campante et al., 2022).

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 6 of Table 3.

The first two columns of Table 10 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 the labour market participation to the extent that life satisfaction more closely depends on work-related issues for men than women, with women's satisfaction depending on a wider range of life dimensions (Senik, 2015; Stevenson

Table 10: 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
	(0.908)	(0.786)	(0.843)	(0.976)
Health $status_{it}$	0.393^a	0.390^a	0.346^a	0.435^a
	(0.025)	(0.029)	(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			
Observations	27,937	26,780	21,552	33,165
No. of individuals	8,728	8,164	6,578	10,314
No. of cities	125	125	124	125

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 member. **Time-varying city controls:** ln GDP per capita, ln Primary GDP, ln Secondary GDP, ln Population, ln SO2 per capita and ln Import Competition. Marginal effects of ordered logit estimations are reported. Heteroskedasticity-robust standard errors clustered at city level in parentheses. ^{a}, ^{b} and ^{c} indicate significance at the 1%, 5% and 10% confidence levels.

and Wolfers, 2009). It therefore seems consistent to observe a greater sensitivity of men's life satisfaction to export opportunities if they value mainly the aspects corresponding to their status as workers.

The last two columns of Table 10 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 9 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 in value and non-significant. These findings are in line with expectations. Educated workers may be the ones with the 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. Both aspects imply a greater sensitivity of life satisfaction to local export dynamics for low-educated workers.

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.

References

Acemoglu, Daron, David Autor, David Dorn, Gordon Hanson and Brendan Price, 2016, Import Competition and the Great US Employment Sag of the 2000s, Journal of Labor Economics, 34, 141-198.

Adão, Rodrigo, Michal Kolesár, and Eduardo Morales, 2019, Shift-Share Designs: Theory and Inference. Quarterly Journal of Economics, 134(4): 1949-2010.

Autor, David, David Dorn, and Gordon Hanson, 2013, The China Syndrome: Local Labor Market Effects of Import Competition in the United States, American Economic Review, 103 (6), 2121-2168.

Autor, David, David Dorn, Gordon Hanson, and Jae Song, 2014, Trade Adjustment: Worker-Level Evidence, Quarterly Journal of Economics, 129 (4), 1799-1860.

Autor, David, David Dorn and Gordon Hanson, 2019, When Work Disappears: Manufacturing Decline and the Falling Marriage Market Value of Young Men, American Economic Review: Insights 1 (2), 161-178.

Autor, David, David Dorn, Gordon Hanson and Kaveh Majlesi, 2020, Importing Political Polarization? The Electoral Consequences of Rising Trade Exposure, American Economic Review, 110 (10), 3139–3183.

Autor, David, David Dorn, and Gordon H. Hanson, 2021, On the Persistence of the China Shock, NBER Working Paper 29401.

Bartolini, Stefano and Francesco Sarracino, 2015, The Dark Side of Chinese Growth: Declining Social Capital and Well-Being in Times of Economic Boom, World Development, 74, 333-351.

Baetschmann, Gregori, Kevin Staub, and Rainer Winkelmann, 2015, Consistent estimation of the fixed effects ordered logit model, Journal of the Royal Statistical Society, Series A 178: 685–703.

Bartolini, Stefano and Francesco, Sarracino, 2015, The Dark Side of Chinese Growth: Declining Social Capital and Well-Being in Times of Economic Boom, World Development, 74(C), 333-351.

Blanchard, Emily J., Chad P. Bown and Davin Chor, Did Trump's Trade War Impact the 2018 Election?, 2019, NBER Working paper n. 26434.

Bombardini, Matilde and Bingjing Li, 2020, Trade, pollution and mortality in China, Journal of International Economics, 125, 103321.

Borusyak, Kirill, Peter Hull and Xavier Jaravel, 2022, Quasi-experimental shift-share research designs, Review of Economic Studies, 89(1), 181-213.

Borusyak, Kirill and Peter Hull, 2020, Non-Random Exposure to Exogenous Shocks: Theory and Applications, NBER Working Paper 27845.

Brandt, Loren, Johannes Van Biesebroeck, Luhang Wang, Yifan Zhang, 2017, WTO Accession and Performance of Chinese Manufacturing Firms, 107(9), 2784-2820.

Campante, Filipe, David Chor and Bingjing Li, 2022, The Political Economy Consequences of China's Export Slowdown, Forthcoming Journal of the European Economic Association.

Che, Yi, Yi Lu, Justin R. Pierce, Peter K. Schott and Zhigang Tao, 2022, Did Trade Liberalization with China Influence US Elections?, Journal of International Economics, Volume 139, November.

Deaton, Angus and Arthur A. Stone, 2013, Two Happiness Puzzles, American Economic Review, 103 (3), 591-597.

Dippel, Christian, Robert Gold, Stephan Heblich and Rodrigo Pinto, 2022, The Effect of Trade on Workers and Voters, The Economic Journal, 132, 641, 199-217.

Easterlin, Richard A., Robson Morgan, Malgorzata Switek, and Fei Wang, 2012, China's life satisfaction, Proceedings of the National Academy of Sciences (PNAS), 109 (25), 9775-9780.

Easterlin, Richard A., Fei Wang and Shun Wang, 2017, Growth and Happiness in China, 1990-2015, Chapter 3 in World Happiness Report 2017. Editors: John Helliwell, Richard Layard and Jeffrey Sachs, New York: Sustainable Development Solutions Network.

Erten, Bilge, and Jessica Leight, 2021. Exporting out of agriculture: The impact of WTO accession on structural transformation in China. Review of Economics and Statistics, 103 (2), 364-380.

Facchini Giovanni, Maggie Y. Liu, Anna Maria Mayda and Minghai Zhou, 2019, China's "Great Migration": The impact of the reduction in trade policy uncertainty, 120, 126-144.

Fan, Haichao, Faqin Lin and Shu Lin, 2020, The hidden cost of trade liberalization: Input tariff shocks and worker health in China, Journal of International Economics, 126, 103349.

Feler, Leo and Mine Z. Senses, Trade Shocks and the Provision of Local Public Goods, American Economic Journal: Economic Policy, vol. 9(4), pp. 101-43.

Feng, Jin, Qiang Xie and Xiaohan Zhang, 2021. Trade liberalization and the health of working-age adults: Evidence from China, World Development, 139(C), 105344.

Fu, Dahai and Yanrui Wu, 2013, Export Wage Premium in China's Manufacturing Sector: A Firm-Level Analysis, China Economic Review 26, 182-96.

Finger, Joseph M., and Mordechai E. Kreinin. 1979. A Measure of 'Export Similarity' and Its Possible Uses, Economic Journal 89(356), 905-912.

Gaulier, Guillaume and Soledad Zignago, 2010, BACI: International Trade Database at the Product-Level. The 1994-2007 Version. CEPII Working Paper, N°2010-23.

Goldsmith-Pinkham Paul, Isaac Sorkin and Henry Swift, 2020, Bartik Instruments: What, When, Why, and How, American Economic Review, 110 (8), 2586-2624.

Head, Keith, and Thierry Mayer, 2014, Gravity Equations: Workhorse, Toolkit, and Cookbook, Chapter 3 in Gopinath, G, E. Helpman and K. Rogoff (Eds), Vol. 4 of the Handbook of International Economics, Elsevier: 131-195.

Hering, Laura and Sandra Poncet, 2010, Market access impact on individual wages: evidence from China, Review of Economics and Statistics, 92 (1), 145-159.

Hummels, David, Jakob and Chong Xiang, 2016, No Pain, No Gain: The Effects of Exports on Effort, Injury, and Illness, NBER Working Paper 22365.

Knight, John, Lina Song and Ramani Gunatilaka, 2009, Subjective Well-being and Its Determinants in Rural China, China Economic Review, 20, 635-649.

Knight, John and Ramani Gunatilaka 2010, The Rural-urban Divide in China: Income but Not Happiness?, Journal of Development Studies, 46, 506-534.

Li, Jie, Yi Lu, Hong Song, and Huihua Xie, 2019, Long-term impact of trade liberalization on human capital formation, Journal of Comparative Economics, 47 (4), 946-961.

McKelvey, Richard D. and William Zavoina, 1975. A statistical model for the analysis of ordinal level dependent variables. Journal of Mathematical Sociology, 4: 103–120.

McCullagh, Peter (1980). "Regression Models for Ordinal Data". Journal of the Royal Statistical Society Series B, 42 (2), 109–142.

Oswald, Andrew J., 1997, Happiness and Economic Performance, Economic Journal, 107, 1815-31.

Ouyang, Difei and Yuan, Weidi, 2022, The Flip Side of the China Syndrome: Local Labor Market Effects in China.

Pierce, Justin R. and Peter K. Schott, 2020, Trade Liberalization and Mortality: Evidence from U.S. Counties, AER: Insights, 2(1), 47-64.

Redding, Stephen J., and Anthony J. Venables, 2004, Economic Geography and International Inequality, Journal of International Economics 62 (1), 53-82.

Ren, Hao, Eli Friedman and Zhongjin Li, 2016, China on Strike Narratives of Workers' Resistance, Haymarket Books, Chicago, USA.

Senik, Claudia, 2015, Gender Gaps in Subjective well-being, Research report, European Commission, Directorate-General for Justice and Consumers.

Stevenson, Betsey and Justin Wolfers, 2009, The Paradox of Declining Female Happiness, American Economic Journal: Economic Policy, American Economic Association, 1 (2), 190-225.

Stone, Arthur. A., and Christopher Mackie, Eds. 2014. Subjective Well-being: Measuring Happiness, Suffering, and Other Dimensions of Experience. Washington, DC: National Research Council, National Academies Press.

Walter Stefanie, 2021,The Backlash Against Globalization, Annual Review of Political Science, 24, 421-442.

Wooldridge, Jeff M., 2010. Econometric Analysis of Cross Section and Panel Data, 2nd Edition. The MIT Press, Cambridge, Massachusetts.

Xie, Yu and Jingwei Hu, 2014, An Introduction to the China Family Panel Studies (CFPS), Chinese Sociological Review, 47 (1), 3-29.

Zhang, Xin, Xiaobo Zhang and Xi Chen, 2017, Happiness in the Air: How Does a Dirty Sky Affect Subjective Well-being?, Journal of Environmental Economics and Management, 85, 81-94.

Appendix A: Data and Indicators

A-1 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.[38] It covers the whole Chinese territory apart from six peripheral provinces (Xinjiang, Tibet, Qinghai, Inner Mongolia, Ningxia and Hainan).[39] 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).[40]

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%) (according to the Census Bureau's definition of urban and rural areas).

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.[41] 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

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

[39] These peripheral provinces are large in size but relatively sparsely populated: they contain only six per cent of the national population.

[40] 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 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.

[41] 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.

Table A-1: Summary statistics

	Obs	Median	Mean	Std. dev.	Min.	Max.
Individual characteristics						
Life Satisfaction$_{it}$	117163	4	3.56	1.06	1	5
Health status$_{it}$	117163	2	2.19	0.70	1	3
Ln Fam inc. p.c.$_{ht}$	117163	8.99	8.82	1.25	-1.61	14.4
Fam inc. p.c.$_{ht}$	117163	8,000	12,250	20,684	0	1,806,000
Male$_{it}$	117163	0	0.49	0.50	0	1
Age$_{it}$	117163	46	46.2	16.6	16	102
Has job$_{it}$	117163	1	0.76	0.43	0	1
Migrant$_{it}$	117163	0	0.052	0.22	0	1
Ln age$_{it}$	117163	3.83	3.76	0.40	2.77	4.62
Ln age$^2_{it}$	117163	14.7	14.3	2.93	7.69	21.4
In couple$_{it}$	117163	1	0.80	0.40	0	1
Nb children$_{it}$	117163	0	0.47	0.77	0	7
Urban$_{it}$	117163	0	0.46	0.50	0	1
CPC member$_{it}$	117163	0	0.078	0.27	0	1
Urban Hukou$_{it}$	117163	0	0.29	0.45	0	1
Edu level$_{it}$	117163	3	2.58	1.34	1	8
Δ Life Satisfaction$_{it}$	64509	0	0.042	1.27	-4	4
Δ Health status$_{it}$	64509	0	-0.079	0.72	-2	2
Δ Ln Fam inc. p.c.$_{ht}$	64509	0.18	0.14	1.34	-10.3	10.4
$\Delta_{2010\text{-}16}$ Life Satisfaction$_{it}$	18931	0	0.15	1.31	-4	4
$\Delta_{2010\text{-}16}$ Health status$_{it}$	18931	0	-0.22	0.79	-2	2
$\Delta_{2010\text{-}16}$ Ln Fam inc. p.c.$_{ht}$	18931	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	-12.7	-12.6	0.48	-14.2	-10.9
Ln ImpComp$_{ct}$ (LI)	497	-13.0	-12.8	0.82	-14.3	-9.93
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
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 SO2 pc$_{ct}$	497	4.47	4.43	0.93	1.54	6.55
Ln $\widehat{\text{Exports}}_{ct}$	485	13.1	13.0	0.64	10.3	14.1
Δ Ln ExpOpp$_{ct}$	497	0.0069	0.0076	0.028	-0.11	0.13
$\Delta_{2010\text{-}16}$ Ln ExpOpp$_{ct}$	123	0.033	0.0358	0.042	-0.096	0.26

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% of respondents declared being dissatisfied or very dissatisfied with their current job. A large share (43.8%) are neither satisfied nor dissatisfied, while 34% report being satisfied and 12% 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 5 options, these answer options vary slightly for year to year, which leads us to reagregate them to obtain a consistent measure of health status over time.[42] The share of individuals indicating poor health is around 16% 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% of individuals in 2016 compared to 70% 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 well the gap between China's urban and rural areas (Piketty et al., 2019).[43] 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 rely however on the information on individual income to determine whether a person works or not. In 2010, personal income is still recorded for 70% of our sample, however, only about 60% of the working age individuals indicated that they were working. This is due

[42] In 2010, 1 indicates healthy, 2 fairly healthy and 3 relatively unhealthy, 4 unhealthy and 5 very unhealthy. In contrast, from 2012 onwards, 1 refers to excellent, 2 to very good health, 3 to good, 4 to fair and 5 to poor health.

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

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-2 Attrition and 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 disappear from the sample, notably because they move to another prefecture, this may lead to an upward bias in the estimated coefficient.

Table A-2 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 one 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

Table A-2: 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}	2.369^a	2.294^a	2.051^a	1.806^a	1.761^a	1.803^a
	(0.673)	(0.685)	(0.737)	(0.537)	(0.512)	(0.512)
$\times$ Attrition_i	-0.851					
	(0.646)					
$\times$ $\text{Moved between cities}_i$		-1.142				
		(1.152)				
$\times$ Migrant_i			1.113			
			(1.028)			
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)
$\text{Health status}_{it}$	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
Observations	54,717	54,717	54,717	54,871	55,293	56,197
No. of individuals	16,892	16,892	16,892	16,950	17,076	17,378
No. of cities	125	125	125	125	126	125

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 member. **Time-varying city controls:** ln GDP per capita, ln Primary GDP, ln Secondary GDP, ln Population, ln SO2 per capita and ln Import Competition. Marginal effects of ordered logit estimations 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%, 5% and 10% confidence levels.

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 indicating whether the individual changed their living location while remaining in the same prefecture.[44] 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 A-2 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 6 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 TableřefTabLSOL. This confirms, once again, that the inability of CFPS surveys to adequately track movers does not compromise our main results.

A-3 Construction of Export Opportunities

A-3.1 Export opportunities: construction of main variable

Our main explanatory variable, local export opportunities, is presented in Equation 1, and defined as $ExpOpp_{ct} = \sum_k \frac{L_{ck,t_0}}{\sum_c L_{ck,t_0}} FD_{kt}$ where $FD_{kt} = \frac{\sum_d D_{dkt}}{Y_{k,t_0}}$. It combines information on

[44] 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.

foreign demand D_{dkt} of partners d and on industry specialisation in China, where k indexes the Harmonized System 2-digit 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).[45]

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

$$EX_{odkt} = S_{okt}\phi_{odkt}D_{dkt} = \underbrace{\frac{Y_{okt}}{\Pi_{okt}}}_{S_{okt}}\phi_{odkt}\underbrace{\frac{E_{dkt}}{P_{dkt}}}_{D_{dkt}}, \tag{4}$$

where EX_{odkt} denotes the bilateral export flow of product k from the origin country o to destination country d in year t. ϕ_{odkt} is an inverse measure of bilateral trade barriers and reflects the 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 4 estimated in logs. This is Equation 2 in the main text:

$$\ln EX_{odkt} = \ln S_{okt} + \ln \phi_{odkt} + \ln D_{dkt} + u_{odkt}$$

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.[46] We allow the coefficients of these two variables to vary by industry to take into account sectoral

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

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

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 ($\widehat{\ln D_{dkt}}$) 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). We trade flows for 96 industries (HS2 aggregation).

A-3.2 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 $ImpComp_{ct}$ 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.

A-3.3 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.[47] 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

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

controlling for other macro economic 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: $\widehat{Exports}_{ct} = \sum_k \frac{\text{Exports}_{ck,2009}}{\text{Exports}_{k,2009}} \text{Exports}_{k,t}$.[48]

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.

[48] We follow Bombardini and Li (2020) who face the same problem of missing local exports for parts of their sample period. See Section 5.2.2 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		0.689^b	0.962^b	
	(1.240)	(1.349)		(0.275)	(0.369)	
Ln $ImpComp_{ct}$ (HI)	1.487^b	0.936		0.142	-0.007	
	(0.627)	(1.389)		(0.120)	(0.153)	
Ln $ImpComp_{ct}$ (LI)	-0.911	-0.582		-0.049	0.024	
	(0.691)	(0.968)		(0.043)	(0.062)	
Δ Ln $ExpOpp_{ct}$			3.022^c			0.724^c
			(1.638)			(0.355)
Δ Ln $ImpComp_{ct}$ (HI)			2.019			-0.048
			(1.564)			(0.109)
Δ Ln $ImpComp_{ct}$ (LI)			-0.884			0.072
			(1.038)			(0.079)
City Controls:		Yes			Yes	
City FE	Yes	Yes		Yes	Yes	
Year FE	Yes			Yes		
Province-year FE		Yes	Yes		Yes	Yes
Observations	374	362	240	485	468	468
No. of cities	125	121	120	122	118	118
R^2	0.986	0.988	0.188	0.993	0.995	0.652

Sample: The sample in Columns 1-3 excludes 2016 due to missing export data for 2016. Columns 4-6 includes all years (2010, 2012, 2014 and 2016). **City controls:** ln GDP per capita, ln Primary GDP, ln Secondary GDP, ln Population, ln SO2 per capita. Heteroskedasticity-robust standard errors clustered at province level in parentheses. ^{a}, ^{b} and ^{c} indicate significance at the 1%, 5% and 10% confidence levels.

Appendix B: Additional robustness checks

B-1 Alternative Export opportunities indicators

Table B-1 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 ($s_{ck,2009} = \frac{L_{ck,2009}}{\sum_c L_{ck,2009}}$) to allocate sectoral export demand at the locality level. Column 1 uses industry local labor shares for the year 2009 instead of 2007. Column 2 uses local industry output shares. Results are similar to those of our benchmark (Column 6 of Table 3). In Columns 3 and 4, we use alternative measures $Y_{k,t0}$ to scale the industry-level foreign demand shock, $FD_{kt} = \frac{\sum_d D_{dkt}}{Y_{k,t0}}$. 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 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 the normalization in the construction of our export opportunities indicator.

Table B-1: 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
	(0.794)	(0.454)	(0.598)	(0.819)
Controls	Individual and city level controls			
Fixed effects	Individual and province-year fixed effects			
Observations	54,717	54,717	54,717	54,717
No. of individuals	16,892	16,892	16,892	16,892
No. of cities	125	125	125	125

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 member. **Time-varying city controls:** ln GDP per capita, ln Primary GDP, ln Secondary GDP, ln Population, ln SO2 per capita and ln Import Competition. Marginal effects of ordered logit estimations are reported. Heteroskedasticity-robust standard errors clustered at city level in parentheses. ^{a}, ^{b} and ^{c} indicate significance at the 1%, 5% and 10% confidence levels.

B-2 Robustness: balance tests and statistical inference

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 et al. (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 et al. (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 et al. (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 $s_k = \sum_c s_{ck}$:

$$\bar{Y}_k^{\perp} = \alpha + \beta \; \bar{X}_k^{\perp} + \epsilon_k \tag{B-1}$$

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 B-1 proposed by Borusyak et al. (2022) also has the advantage of solving a statistical inference problem in shift-share analyses due to the fact that observations with similar exposure shares are likely to have correlated residuals (Adão et al., 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 case of spatial correlation of residuals due to similar industrial composition of prefectures belonging to different provinces. Borusyak et al. (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 B-2, which reproduces our baseline specification of Column 6 in Table 3 in OLS with $ExpOpp_{ct}$ introduced in level. Column 2 of Table B-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% 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

Table B-2: Individual vs. industry-level analysis

	(1)	(2)
Dependent variable:	Life satisfaction$_{it}$	Life satisfaction$^{R}_{kt}$
	individual-level regression	industry-level regression
ExpOpp$_{ct}$	0.092^{a}	
	(0.034)	
ExpOpp$^{R}_{kt}$		0.092^{a}
		(0.029)
Observations	64,341	368
R^2	0.541	0.047

Column 1: The sample and included variables are the same as in Column 6 in Table 3, 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 6 in Table 3. Industry weighted averages are constructed using 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%, 5% and 10% confidence levels.

the statistical inference of our baseline results.

To further 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} 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. (2022):

$$Similarity_{ij} = \sum_{k} min\left\{s_{ik}, s_{jk}\right\}$$

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 B-3 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

Table B-3: ExpOpp: cluster on similarity index (ordered logit)

	(1)	(2)
Dependent variable:	Self-reported life satisfaction (1-5)	
Ln $\text{ExpOpp}_{\text{ct}}$	2.224^a	2.224^a
	(0.501)	(0.530)
Health $\text{status}_{\text{it}}$	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	
Observations	54,717	54,717
No. of individuals	16,892	16,892
No. of cities	125	125

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 member. **Time-varying city controls:** ln GDP per capita, ln Primary GDP, ln Secondary GDP, ln Population, ln SO2 per capita and ln Import Competition. Marginal effects of ordered logit estimations 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%, 5% and 10% confidence levels.

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.

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 et al. (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: (i) prefecture-level variables namely GDP per capita,

export-to-GDP ratio, primary and secondary sector GDP, population, and SO_2 emissions per capita; and (ii) individual outcomes (life satisfaction, health score and log of per capita household income) averaged at the prefecture level. Table B-4 reports the balance checks on these variables. We use again Equation B-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 outcomes of interest.[49] 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 B-4 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.

[49]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 B-4: 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 SO2 pc$_{k,2010}$	-0.061	(0.399)
Ln Export/GDP$_{k,2010}$	0.000	(0.000)

Sample: 92 industries × 4 years (2010, 2012, 2014 and 2016). 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. All regressions are weighted by the average industry exposure. Heteroskedast robust standard errors clustered at HS1 sector level in parentheses.^{a}, ^{b} and ^{c} indicate significance at the 1%, 5% and 10% confidence levels.

C-1 Full results and specification checks of main results

Table C-1: Physical and mental health (ordered logit): full results corresponding to Table 1

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable:	Self-reported health status (1-3)	Depressed (1-5)		Self-reported health status (1-3)	Depressed (1-5)	
Sample:	Working age			Non working age		
Ln $ExpOpp_{ct}$	-4.196^{a}	0.182	-0.382	-2.248^{c}	1.731	1.388
	(1.090)	(1.271)	(1.198)	(1.248)	(1.211)	(1.198)
Ln GDP pc_{ct}	1.081	-0.172	-0.007	-1.097	-0.161	-0.368
	(0.960)	(0.648)	(0.635)	(0.875)	(0.715)	(0.734)
ln Primary GDP_{ct}	-0.261	0.239	0.241	0.149	-0.254	-0.262
	(0.348)	(0.370)	(0.364)	(0.351)	(0.345)	(0.340)
ln Secondary GDP_{ct}	-0.084	0.046	-0.009	1.035^{b}	-0.190	-0.030
	(0.479)	(0.405)	(0.398)	(0.465)	(0.443)	(0.440)
Ln Pop_{ct}	1.491	0.536	0.727	-1.177	0.188	-0.033
	(1.021)	(0.689)	(0.699)	(0.842)	(0.697)	(0.718)
Ln SO2 pc_{ct}	0.087	-0.028	-0.015	0.037	-0.055	-0.046
	(0.055)	(0.067)	(0.065)	(0.060)	(0.069)	(0.069)
Ln $ImpComp_{ct}$ (HI)	0.318	-1.791^{c}	-1.725^{c}	-0.107	-1.431	-1.425
	(0.945)	(0.964)	(0.952)	(0.834)	(1.002)	(1.003)
Ln $ImpComp_{ct}$ (LI)	-0.072	0.449	0.464	0.372	0.237	0.312
	(0.366)	(0.356)	(0.352)	(0.274)	(0.360)	(0.369)
Ln Family income pc_{ht}	0.027^{c}	-0.017	-0.014	0.017	-0.001	0.003
	(0.014)	(0.013)	(0.013)	(0.015)	(0.016)	(0.016)
$Health\ status_{it}$			-0.493^{a}			-0.462^{a}
			(0.024)			(0.025)
$Has\ job_{it}$	0.192^{a}	-0.035	-0.009	0.156^{a}	-0.040	-0.020
	(0.046)	(0.040)	(0.041)	(0.042)	(0.033)	(0.034)
$Migrant_{it}$	-0.062	-0.015	-0.022	-0.239^{c}	0.212	0.191
	(0.091)	(0.074)	(0.073)	(0.125)	(0.156)	(0.158)
Ln age_{it}	-27.210^{c}	18.142	16.076	9.152	14.574	15.497
	(14.541)	(12.949)	(13.084)	(11.363)	(10.915)	(10.803)
Ln age^2_{it}	4.590	-3.607	-3.291	-2.010	-3.164	-3.363
	(2.875)	(2.541)	(2.571)	(2.321)	(2.222)	(2.200)
In $couple_{it}$	-0.064	-0.296^{a}	-0.288^{a}	-0.050	-0.153^{c}	-0.169^{c}
	(0.068)	(0.070)	(0.071)	(0.095)	(0.090)	(0.090)
Nb $children_{it}$	-0.041	0.068^{b}	0.063^{b}	-0.271^{b}	0.108	0.090
	(0.033)	(0.032)	(0.032)	(0.125)	(0.118)	(0.119)
$Urban_{it}$	0.093	0.103	0.117	0.068	0.154^{c}	0.152^{c}
	(0.108)	(0.086)	(0.092)	(0.114)	(0.087)	(0.092)
CPC $member_{it}$	-0.144	0.194^{b}	0.166^{c}	0.009	-0.018	0.002
	(0.101)	(0.092)	(0.092)	(0.114)	(0.124)	(0.125)
Urban $Hukou_{it}$	-0.022	0.032	0.025	-0.133	-0.127	-0.125
	(0.090)	(0.066)	(0.066)	(0.097)	(0.104)	(0.105)
Edu $level_{it}$	0.032	-0.056	-0.048	-0.075	-0.131^{b}	-0.136^{a}
	(0.045)	(0.050)	(0.049)	(0.047)	(0.051)	(0.052)
Controls	Individual and city level controls					
Fixed effects	Individual and province-year fixed effects					
Observations	43,114	47,052	47,052	26,925	29,935	29,935
No. of individuals	13,120	14,403	14,403	8,214	9,224	9,224
No. of cities	125	125	125	125	125	125

Sample: Columns 1-3: Individuals of working age (men aged 20-60, women aged 20-55). Columns 4-6: Individuals not of working age (Men aged 16-20 and 60+, females aged 16-20 and 55+). Marginal effects of ordered logit estimations are reported. Heteroskedasticity-robust standard errors clustered at city level in parentheses. ^{a}, ^{b} and ^{c} indicate significance at the 1%, 5% and 10% confidence levels.

Table C-2: Physical and mental health: OLS results corresponding to Table 1

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable:	Self-reported health status (1-3)	Depressed (1-5)		Self-reported health status (1-3)	Depressed (1-5)	
Sample:	Working age			Non working age		
Ln $ExpOpp_{ct}$	-1.137^a	0.095	-0.108	-0.937^a	0.312	0.145
	(0.299)	(0.458)	(0.435)	(0.264)	(0.420)	(0.404)
Ln Family income pc_{ht}	0.006^c	-0.006	-0.005	0.005^c	-0.004	-0.003
	(0.003)	(0.004)	(0.004)	(0.003)	(0.004)	(0.004)
Health $status_{it}$			-0.178^a			-0.177^a
			(0.009)			(0.008)
Controls	Individual and city level controls					
Fixed effects	Individual and province-year fixed effects					
Observations	64,341	64,224	64,224	105,493	105,124	105,124
No. of cities	125	125	125	125	125	125
R^2	0.594	0.459	0.467	0.626	0.462	0.469

Sample: Columns 1-3: Individuals of working age (men aged 20-60, women aged 20-55). Columns 4-6: Individuals not of working age (Men aged 16-20 and 60+, females aged 16-20 and 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 member. **Time-varying city controls:** ln GDP per capita, ln Primary GDP, ln Secondary GDP, ln Population, ln SO2 per capita and ln Import Competition. Heteroskedasticity-robust standard errors clustered at city level in parentheses. ^{a}, ^{b} and ^{c} indicate significance at the 1%, 5% and 10% confidence levels.

Table C-3: Export Opportunities and Life satisfaction (ordered logit): full results corresponding to Table 3

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	Self-reported life satisfaction (1-5)						
Sample:	Working age pop.						Non working age
						benchmark	
Ln $ExpOpp_{ct}$	1.369^{b}		1.794^{a}	1.796^{b}	2.275^{a}	2.224^{a}	1.523
	(0.666)		(0.679)	(0.700)	(0.689)	(0.688)	(1.451)
Ln GDP pc_{ct}		-0.344	-0.678	-0.694^{c}	-0.753^{c}	-0.786^{c}	0.233
		(0.433)	(0.423)	(0.415)	(0.441)	(0.437)	(0.695)
ln Primary GDP_{ct}		0.130	0.137	0.109	0.168	0.150	0.222
		(0.277)	(0.277)	(0.280)	(0.279)	(0.277)	(0.378)
ln Secondary GDP_{ct}		0.087	0.225	0.259	0.240	0.261	0.128
		(0.258)	(0.240)	(0.242)	(0.250)	(0.249)	(0.391)
Ln Pop_{ct}		-0.412	-0.696	-0.671	-0.758	-0.792^{c}	-0.254
		(0.451)	(0.436)	(0.430)	(0.466)	(0.463)	(0.753)
Ln SO2 pc_{ct}		0.092^{c}	0.095^{c}	0.104^{b}	0.094^{c}	0.098^{c}	0.085
		(0.054)	(0.052)	(0.052)	(0.051)	(0.051)	(0.058)
Ln $ImpComp_{ct}$ (HI)		1.039	1.210^{c}	1.277^{b}	1.293^{b}	1.300^{b}	1.183
		(0.653)	(0.619)	(0.634)	(0.615)	(0.616)	(0.763)
Ln $ImpComp_{ct}$ (LI)		0.194	0.114	0.091	0.070	0.084	-0.381
		(0.220)	(0.213)	(0.209)	(0.218)	(0.218)	(0.377)
Ln Family income pc_{ht}				0.048^{a}		0.046^{a}	0.044^{a}
				(0.013)		(0.013)	(0.015)
Health $status_{it}$					0.391^{a}	0.390^{a}	0.337^{a}
					(0.021)	(0.021)	(0.030)
Has job_{it}				0.003	-0.007	-0.014	0.069^{b}
				(0.035)	(0.036)	(0.036)	(0.035)
$Migrant_{it}$				-0.058	-0.039	-0.043	0.029
				(0.081)	(0.080)	(0.081)	(0.092)
Ln age_{it}				3.268	6.273	5.862	4.632
				(13.034)	(13.152)	(13.148)	(12.684)
Ln age^2_{it}				-1.578	-2.139	-2.060	-1.882
				(2.549)	(2.573)	(2.573)	(2.591)
In $couple_{it}$				0.447^{a}	0.460^{a}	0.458^{a}	0.093
				(0.065)	(0.065)	(0.065)	(0.075)
Nb $children_{it}$				-0.007	-0.011	-0.003	-0.031
				(0.030)	(0.030)	(0.030)	(0.089)
$Urban_{it}$				-0.095	-0.094	-0.096	-0.098
				(0.098)	(0.096)	(0.095)	(0.092)
CPC $member_{it}$				0.161	0.165	0.166	0.106
				(0.105)	(0.105)	(0.105)	(0.117)
Urban $Hukou_{it}$				-0.007	-0.004	-0.006	0.064
				(0.075)	(0.074)	(0.074)	(0.103)
Edu $level_{it}$				0.043	0.037	0.036	0.047
				(0.037)	(0.037)	(0.037)	(0.043)
Individual Controls:	No	No	No	Yes	Yes	Yes	Yes
Fixed effects	Individual and province-year fixed effects						
Observations	54,717	54,717	54,717	54,717	54,717	54,717	34,984
No. of individuals	16,892	16,892	16,892	16,892	16,892	16,892	10,820
No. of cities	125	125	125	125	125	125	125

Sample: Columns 1-6: Individuals of working age (men aged 20-60, women aged 20-55). Column 7: Individuals not of working age (Men aged 16-20 and 60+, female aged 16-20 and 55+). Marginal effects of ordered logit estimations are reported. Heteroskedasticity-robust standard errors clustered at city level in parentheses. ^{a}, ^{b} and ^{c} indicate significance at the 1%, 5% and 10% confidence levels.

Table C-4: Export Opportunities and Life satisfaction: OLS results corresponding to Table 3

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	Self-reported life satisfaction (1-5)						
Sample:	Working age pop.						Non working age
						benchmark	
Ln $ExpOpp_{ct}$	0.681^{b}		0.863^{a}	0.862^{a}	1.095^{a}	1.072^{a}	0.831
	(0.319)		(0.317)	(0.325)	(0.319)	(0.318)	(0.678)
Ln GDP pc_{ct}		-0.148	-0.307	-0.310	-0.341^{c}	-0.357^{c}	0.065
		(0.198)	(0.190)	(0.188)	(0.193)	(0.190)	(0.318)
ln Primary GDP_{ct}		0.057	0.064	0.053	0.075	0.069	0.128
		(0.128)	(0.128)	(0.129)	(0.129)	(0.128)	(0.180)
ln Secondary GDP_{ct}		0.041	0.107	0.116	0.108	0.117	0.086
		(0.119)	(0.110)	(0.111)	(0.110)	(0.110)	(0.184)
Ln Pop_{ct}		-0.161	-0.296	-0.284	-0.329	-0.345^{c}	-0.156
		(0.202)	(0.192)	(0.189)	(0.201)	(0.199)	(0.345)
Ln SO2 pc_{ct}		0.038	0.040	0.044	0.038	0.041	0.041^{c}
		(0.028)	(0.027)	(0.027)	(0.026)	(0.026)	(0.025)
Ln $ImpComp_{ct}$ (HI)		0.502	0.579^{c}	0.604^{c}	0.595^{b}	0.600^{b}	0.587
		(0.313)	(0.299)	(0.305)	(0.294)	(0.295)	(0.369)
Ln $ImpComp_{ct}$ (LI)		0.092	0.055	0.047	0.037	0.044	-0.167
		(0.112)	(0.109)	(0.106)	(0.111)	(0.111)	(0.180)
Ln Family income pc_{ht}				0.023^{a}		0.022^{a}	0.020^{a}
				(0.006)		(0.006)	(0.007)
Health $status_{it}$					0.185^{a}	0.185^{a}	0.153^{a}
					(0.009)	(0.009)	(0.014)
Individual Controls:	No	No	No	Yes	Yes	Yes	Yes
Fixed effects	Individual and province-year fixed effects						
Observations	64,341	64,341	64,341	64,341	64,341	64,341	41,152
No. of cities	125	125	125	125	125	125	125
R^2	0.534	0.534	0.534	0.536	0.541	0.541	0.518

Sample: Columns 1-6: Individuals of working age (men aged 20-60, women aged 20-55). Column 7: Individuals not of working age (Men aged 16-20 and 60+, female aged 16-20 and 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 member. Heteroskedasticity-robust standard errors clustered at city level in parentheses. ^{a}, ^{b} and ^{c} indicate significance at the 1%, 5% and 10% confidence levels.