

**Research Unit for Statistical
and Empirical Analysis in Social Sciences (Hi-Stat)**

**Exploring Engel's Law and
Personal Consumption in the
Philippines, 1902~1941**

Konosuke Odaka

August 2023

Preliminary; not for quotation

This discussion paper is prepared for “A Study Workshop on the Quantitative Macro Economic History of the Philippines, 1900-2010”. This international workshop is supported by the 2022 research grant from the Japan Center for Economic Research (JCER).

Exploring Engel's Law and Personal Consumption in the Philippines, 1902~1941

By
Konosuke Odaka

Introduction

1. Historical Family Expenditure Survey (FES)
 - (1.1) Timing and characteristics of historical FES
 - (1.2) Shortcomings of historical FES
2. Engel's Law and Engel's coefficient
3. Overtime changes in Engel's coefficients: 1902-1941
4. Saving ratio as an indicator of standard of living
5. Family expenditure totals as a macro indicator of personal consumption of the nation
6. Concluding remarks: the standard of living in the Philippines, 1902-1941

Abstract

This paper examines historical trends in the living standards of the working population in the Philippines by utilizing data from intermittent family expenditure surveys conducted between 1902 and 1941. These surveys primarily targeted industrial workers' households, along with some agricultural workers' households. The study aims to estimate time-series statistics of macro personal consumption based on the survey results.

The analysis reveals that while there were fluctuations in Engel's coefficients and periods of decline in real per-capita personal consumption, such as during 1922-1924 and 1932-1934, the author argues that there was a modest long-term improvement in the country's living standards over the four decades.

Introduction

The main focus of this paper is to examine the standard of living of Filipino nationals during the first half of the twentieth century. This will be achieved through an analysis of household expenditure surveys conducted on working households.

1. Historical Family Expenditure Survey (FES)

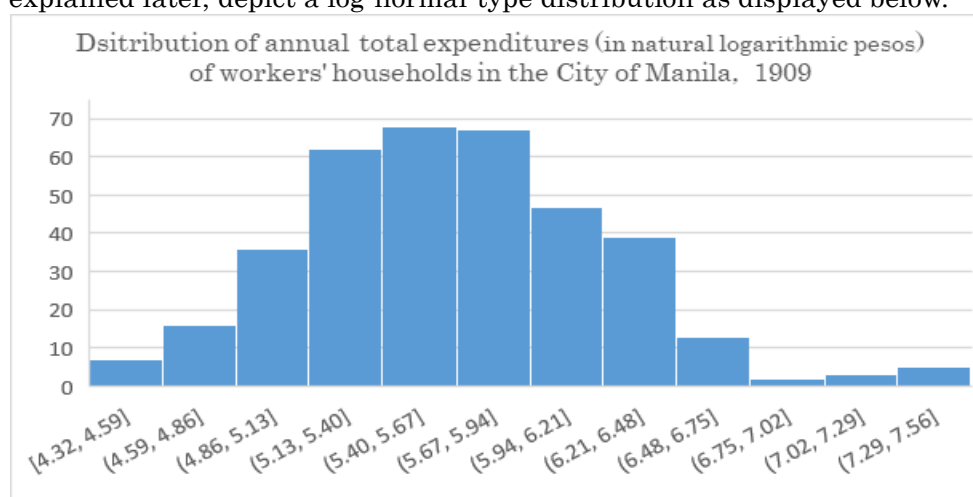
(1-1) Timing and characteristics of the survey

In 1909, the Bureau of Labor of the colonial government of the Philippine Islands conducted its inaugural family expenditure survey (FES¹) on the working class in the City of Manila. The survey encompassed 474 families engaged in various occupations in the commercial and manufacturing industries². The findings, which may also be considered as a survey on personal consumption³, were meticulously classified, tabulated, analyzed, and published in 1911 as part of the first issue of the Bureau's publication, *the Annual Report of the Bureau of Labor*, Fiscal 1910.

Subsequently, household surveys of similar nature were conducted intermittently. At least eleven such questionnaire-based researches were

¹ Now called as family income and expenditure survey (FIES).

² The total number of family members involved, including the respondents, was 1,159. The survey results were classified into 21 occupational categories. The 365 cases, which have been utilized out of total 474 observations in the present study, as will be explained later, depict a log-normal-type distribution as displayed below.



Source) 1909FES; file Exdr dstrbtrn P60.

³ A few FES used in the present investigation reported expenses on house repairing, which is classified here as intermediate consumption in accordance with the 1993 *System of National Accounts* of the United Nations Statistical Office.

identified by the Bureau (or the Labor Department), with varying sample sizes for the years 1910, 1918, 1920, and 1921 in Manila, 1925 in provincial cities, 1927 and 1930 in Manila, 1932 in both Manila and sixteen provincial cities, and 1934 through 1941 in Manila. Additionally, during the 1930s, the Commonwealth government conducted field studies of family budgets in rural areas, including sugar factories. These studies were complemented by academic research (refer to Tables 1 and 2⁴).

———— Tables 1 and 2 about here ————

These surveys consistently utilized the same basic classification for expense items, such as housing rent, lighting, meals, laundry/clothing, fuel, and other expenses. Some surveys also included additional categories, such as poll taxes, education, medical care, union fees, tools, books, and charity. Occasionally, supplementary data on family wages, earnings, and savings were also provided. The following table summarizes information related to income and expenditures from the pre-WWII FES (see Table 3).

———— Table 3 about here ————

While sample sizes varied, and the style and content of the final reports were not always as detailed as the initial 1909 survey, most research outcomes were classified, calculated, and tabulated with explanatory remarks⁵. The primary aim of these surveys was to shed light on the living

⁴ Sources cited at the bottom of all the following tables and figures refer to the author's worksheet codes.

⁵ The first FES of 1909 was exceptionally detailed and comprehensive in its survey outcomes. It recorded various demographic details, such as whether the respondents were married or single, and if they were heads of the households they represented. This allowed the researcher to focus on responses from family heads, disregarding mostly young, single respondents who did not declare themselves as family heads. This adherence to the standard FES definition aimed to elucidate family expenditures.

However, all the other available FES records in the present study provide their statistical information in more aggregated manners. Respondents' replies were summed up by their occupation or income-class categories in the form of (weighted) averages, without providing the same level of detailed information as the 1909 survey. It is likely that these later FES surveys processed responses without considering whether the respondents were heads of households or not.

Considering these circumstances, the present writer has decided to follow the

and working conditions of the labor force in the country, thus providing valuable information for policymakers to improve industrial relations and the overall life environment of the working population. Computational errors and/or misprints were rare, indicating that the surveys were likely conducted with reasonable care and attentiveness.

(1-2) Shortcomings of historical FES

Before proceeding further, one should recognize that historical Family Expenditure Surveys (FES) suffer from (at least) four important shortcomings as a source of socio-economic information.

First and foremost, their survey samples were not only relatively small in size but were chosen with little consideration given to their representativeness. Consequently, they seldom meet the condition that would have otherwise granted them the power to make generalizations based on their findings⁶.

Secondly, FES's heavily depend on the accuracy of the respondents' memory, which is likely to be associated with the relative importance and amount of expense in question. The memory accuracy diminishes when respondents recall trivial expenses, making it less certain. This is particularly problematic in historical FES's, where respondents were not required to keep records of all expenses. Additionally, intentional under- or over-reporting of expenditure information might occur based on the social status of the respondents.

Thirdly, non-monetary expenses, especially related to food and drinks, were not recorded in historical FES's, significantly underestimating the quality of life during the early phases of industrialization. To compensate for this lack of information, researchers may attempt to use the ratio of

procedure likely adopted by FES surveys after 1909. This involves including all the responses from the 1909 survey, even those from single respondents who were not heads of families, as long as they reported their daily expenditures. It should be noted, however, that the computed results of the 1909 survey using the later FES procedure do not substantially differ from the approach closely following the standard definition of the FES.

⁶ As a matter of principle, in contrast, post-WWII family income and expenditure surveys carefully choose their respondents through random sampling.

aggregate-to-monetary household expenditures from post-WWII data⁷ to speculate historical aggregate household expenditure values.

Fourthly, the majority of pre-WWII FES's fail to provide information on household size, which is crucial for understanding the lifestyle and per-capita calorie intakes of family members. Household size plays a role in food expenses, as there are "scale economies,"⁸ where average cooking cost per capita declines with larger family sizes.

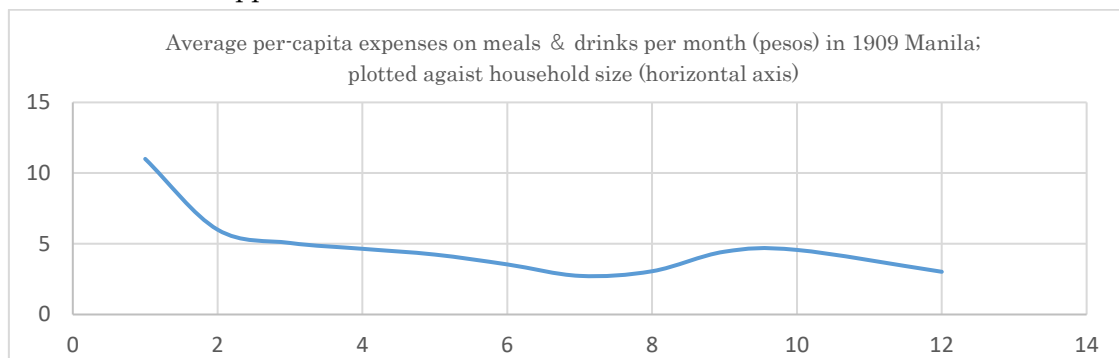
2. Engel's Law and Engel's coefficient

Engel's Law is a well-known empirical observation that states the proportion (%) of expenses on meals and drinks in total household expenditures, known as "Engel's coefficient," decreases as the family's standard of living (or real income per capita) improves⁹. We will use our FES data to measure the Filipino workers' living standard in the first half of the twentieth century based on Engel's coefficient estimates.

To facilitate our investigation, we will use the statistical formulation

⁷ For instance, 1.398 in 1957, according to Philippine Statistical Survey of Households, Bureau of the Census and Statistics, National Economic Council, *The Philippine statistical survey of households bulletin*, series No.4, Manila: March 1957, p.45.

⁸ The 1909 FES produced the following diagram illustrating "scale economies." The diagram shows fluctuating, counter-trend movements in sizes 8, 9, and 10, which can be attributed to the presence of five machinist households. Additionally, size 12 corresponds to a silversmith's household, suggesting that these trade masters possibly ran boarding houses for their apprentices.



Source) 1909FESsngleprsn. ファイル Meals&svngs;AE14

⁹ Due to the general difficulty in obtaining household income figures, it is customary in the discussion of Engel's law to use total expenditure figures instead of total income data. In fact, earning data were not always provided by our FES. Moreover, one may suspect that respondents to the FES often felt reluctant to disclose concise information about their earnings.

of our FES data by estimating the Engel curve as follows:

$$\text{LN}(F) = \alpha + \beta \text{LN}(X) + \gamma \text{LN}(Hz) + \varepsilon \quad (1),$$

where LN indicates the natural logarithm, F represents expenditures on foods and drinks in current prices, X denotes total expenditures in current prices, Hz represents household size or the number of family members, and α , β , γ are parameters to be estimated using the ordinary least-squared (OLS) method of regression analysis, with ε as the error term (see Table 4)¹⁰. By estimating this curve, we can obtain the theoretical or expected values of F (F') and calculate the theoretical values of Engel's coefficient (EGC_{exp}) as

$$\text{EGC}_{\text{exp}} = F'/X.$$

———— Table 4 about here ————

Unfortunately, our FES data typically do not provide information on household size. Despite this limitation, computational exercises with available survey data, including household size information, have shown that the estimated values of the parameter γ in the real-term version of the function (1) are generally not statistically significant¹¹. Therefore, we may compute the Engel curve (1) with or without household size ($\text{Ln}(Hz)$) when estimating the theoretical value of Engel's coefficient (EGC_{exp}).

Figures 1 and 2 display estimated annual Engel curves for the City of Manila and provincial cities plus farming districts, respectively, both with the monthly values of Engel's coefficient on the vertical axis and the monthly values of total household expenditures in constant prices (i.e., X divided by the price index, or x) on the horizontal axis.¹² Most of the curves exhibit the

¹⁰ The possible functional forms are numerous, as demonstrated by Prais (1953). In the present study, we have adopted the log-linear form, inspired by Houthakker's research (1957). Houthakker found that Ernest Engel had recognized that the logarithmic formula fit well with the family expenditure data.

Ideally, we would have included household size, denoted as Hz , as another independent variable in our analysis. Unfortunately, due to limitations in our FES, we were unable to explore beyond the results presented in Table 4.

¹¹ In Table 4, and in the following text, the variables F and X in the function (1) are measured in 1939 pesos to ensure mutual comparability of computed results over time; hence, they are expressed in small letters.

¹² As the price index the present section of this paper has made use of Hooley's GDP deflator (available in Hooley's worksheet, referred to in Hooley 2005), while the later sections have adopted its slightly adjusted version cited in Appendix Table 3, both of which take the value of 1.0 in 1939). The GDP deflators were used as substitutes for consumer price index (CPI) for want of a better choice. The present writer plans to improve this aspect of the study in the future, if possible, e.g., by estimating a CPI.

predicted L-shape, confirming Engel's Law, while the 1918-21 curve shows a counter-L shape likely reflecting the high inflation experienced during the years 1916 through 1920.

———— Figures 1 and 2 about here ————

3. Overtime changes in Engel's coefficients: 1902-1941

To investigate the long-term trend of the living standard among working Filipino households in the City of Manila during the American rule, we aim to estimate missing annual values of Engel coefficients. These missing values are due to the absence of FES in intermittent years. Our approach involves four steps.

Firstly, we conduct a linear regression (1) between the observed real annual values of ' f ' (expenditures on food and drinks in constant prices, or F divided by the price index) as the dependent variable, and those of ' x ' (total household expenditures in constant prices, or X divided by the price index) as the independent variable. We utilize the research outcomes of all available FES data tabulated in Table 1¹³. Although we acknowledge the existence of annual and locational variations in economic and environmental conditions, we hypothesize the presence of a unique, Filipino-style diet, independent of occupations, income levels, and localities. This justifies our use of a single, representative relationship between ' f ' and ' x ' over time and space. The ordinary least squares regression (OLS) method, with this hypothesis, yields the following result presented in Figure 3:

$$\begin{aligned} \text{Ln}(f) = -0.229 + 0.908 \text{Ln}(x), n = 254, R^2 = 0.86 & \quad (2). \\ (-2.86) \quad (39.00) & \end{aligned}$$

—————Figure 3 about here—————

The parameter β with a value of 0.908, which is smaller than unity, indicates a notable and statistically significant tendency for the cost of meals to decline as total expenditures increase, thus corroborating Engel's Law.

Secondly, to fill the missing observations in the FES' total expenditure data for workers' households in the City of Manila estimated in Section 2 above, we propose two assumptions. First, we consider the total monthly

¹³ The annual values of f and x used in the estimation of the regression are weighted, annual averages of their individual values reported for their respective occupational or income classes.

expenditure as a crude substitute for the monthly earning figure. Second, we assume that the unknown figures between the known expenditure values in current prices follow the same patterns of up and down as those of the Philippine money wages during the corresponding years¹⁴. This yields a fully completed time-series for 1902-1941 of workers' total monthly household expenditures in the City of Manila, referred to as X_{CM} ¹⁵. Subsequently, each X_{CM} value is converted to its real version, denoted as x_{CM} , by deflating it with the (adjusted) Hooley's GDP deflator (in 1939 pesos).

Thirdly, by using x_{CM} as the values for the independent variable (x)

¹⁴ In the present study I have used the wage index (1939 = 1.0) quoted in the GDP worksheet of Professor Richard Hooley (2005).

¹⁵ The following is a technical note outlining the three essential steps involved in creating the time-series X_{CM} , which represents the total household expenditure in the City of Manila from 1902 to 1941. The methodology involves a combination of downward-going and upward-going procedures to estimate missing values, followed by a combining procedure to generate a complete and reliable time-series.

Step 1: Downward-going procedure

1. Start with the actual observed total expenditure for year t , denoted as X_t .
2. Multiply X_t by the corresponding annual rate of change in the money wage between year $t+1$ and year t to obtain the estimated value of expenditure for the following year, referred to as X'_{t+1} .
3. Continue this process by multiplying each subsequent estimated value (X'_{t+i}) by the rate of change in the money wage between years $t+2$ and $t+1$, producing the estimated values of expenditures for successive years (X'_{t+2} , X'_{t+3} , ...).

Step 2: Upward-going procedure

1. Begin with the actual observed total expenditure for year t , denoted as X_t .
2. Multiply X_t by the corresponding yearly rate of change in the money wage between years $t-1$ and t to calculate the estimated value of expenditures for the previous year, labeled as X''_{t-1} .
3. Repeat the process by multiplying each subsequent estimated value (X''_{t-1}) by the rate of change in the money wage between years $t-2$ and $t-1$, resulting in the estimated values of expenditures for preceding years (X''_{t-2} , X''_{t-3} , ...).

Step 3: Combining procedure

1. For estimating missing total expenditure values, calculate the geometrical average of the downward-going and upward-going estimates obtained in Steps 1 and 2, respectively. For example, use $(X'_{t+1} * X''_{t+1})^{1/2}$ or $(X'_{t-1} * X''_{t-1})^{1/2}$.
2. Integrate all the observed and estimated annual expenditure figures, as derived from the combining procedure, to create the complete, long run total household expenditure time-series of the City of Manila for the period 1902-1941, denoted as X_{CM} .

The three-step methodology described above, combining the downward-going and upward-going procedures with the geometric averaging technique, facilitates the estimation of missing values in the time-series X_{CM} . By employing this approach, researchers can construct a comprehensive and robust representation of total household expenditure for the City of Manila, spanning the years 1902 to 1941.

in the previously calculated regression (2) for all the years of 1902-1941, we obtain annual estimates of expenditures for foods and drinks of the workers' households in the City of Manila, denoted as f' .

Fourth and finally, by dividing f' by corresponding x_{CM} , we derive the long-run expected trend of Engel's coefficients for the City of Manila, and compare it its actually observed values, as illustrated in Figure 4. Interpreting the figure, one might argue that the living standards in the City witnessed significant declines from 1910 to 1918, followed by a steady improvement during the 1920s leading to convergence with the 'expected' levels in the 1930s.

————Figure 4 about here————

The presence and fluctuations of gaps between actual and 'expected' coefficients during the 1910s and 1920s imply the existence of structural factors hindering the seamless functioning of City governance in maintaining residents' subsistence levels in the early decades of the twentieth century. The persisting domestic political conflicts undoubtedly played a role, while the impacts of cholera and beriberi cannot be dismissed. Moreover, the recurrent El Niño-driven typhoons inflicted significant damages on agricultural output, compounded by rinderpest—an enduring animal disease devastating farming carabaos and consequently affecting agricultural yields, particularly in rice production¹⁶. Adding to these challenges, monetary crises towards the late 1910s introduced a substantial element, contributing to the rapid surge in consumer prices and affecting the ordinary citizens' living conditions. However, the divergence between actual and 'expected' coefficient levels progressively diminished towards the late 1920s. This suggests an increasingly efficient functioning of the urban market system over time, potentially reflecting enhancements in social capital conditions such as improved water supply, better sewerage systems, enhanced transportation, and overall sanitary conditions.

4. Saving ratio as an indicator of standard of living

At this point, it would be beneficial to examine Engel coefficients from

¹⁶ For some of these causes which seriously affected agricultural production, cf. Doeppers (2016, chs. 3~4, especially pp.59-95). Furthermore, countries in the Southeast Asian region such as Malay and Burma suffered from frequent poor crops of rice. This last factor was important, since the Philippines heavily depended on the import of rice.

a different angle. To do so, we may attempt at a close examination of household saving ratios.

Leveraging data from the Bureau of Labor's FES, we have estimated a household consumption function using Ordinary Least Squares (OLS) regression as follows:

$$\ln(C) = \alpha + \beta \ln(Y) + \varepsilon \quad (3)$$

Here, C represents total monthly current expenditures, Y indicates total monthly current earnings, α and β are parameters estimated, and ε represents error term. This estimation allows us to determine household monthly current savings (S) by subtracting the calculated value of C (denoted as C') from the observed value of Y :

$$S = Y - C' \quad (4)$$

Subsequently, monthly saving ratios are calculated as $(S/Y) \times 100\%$ (%).

Figures 5 and 6 depict the observed trends in household saving ratios for both the City of Manila and local areas, respectively. These ratios are juxtaposed with their corresponding estimated Engel coefficients showcased in Figures 1 and 2.

—————Figures 5 and 6 about here—————

An intriguing observation from these diagrams is that households in local areas, except for sugar farmers, displayed equally high positive saving ratios when compared to those in the City of Manila, although they experienced more numerous cases of negative values than the City. An introspective puzzle is the case of Manila industrial workers in 1938, which records a completely reverse relation between the two variables¹⁷.

A scrutiny of the diagrams in Figures 5 and 6 reveals that saving ratios generally increase as Engel coefficients decrease. Simultaneously, however, one notes that (1) the diagrams shift towards the southwest over time, reflecting a general rise in household real income, yet (2) the yearly saving ratios did not consistently rise with time.

These findings suggest a general positive correlation between income and saving ratio, so long as the year observed remains constant. However, an enhancement in real income over time does not necessarily guarantee an increase in the saving ratio.

¹⁷ Would it be possible that the industrial relations of the City in 1938 were such that the employees received publicly un-recorded bonuses or payments in kind, whose amounts were associated positively with the pecuniary values of their wages?

5. Family expenditure totals as a macro indicator of personal consumption of the nation

Using the FES data, we attempt to estimate macro personal consumption of the Philippines during the first forty years of the twentieth century. We follow four technical steps:

Step 1: We focus on the City of Manila's FES outcomes, or X_{CM} , to keep the source data for personal consumption as homogeneous as possible.

Step 2: To derive whole household expenditures in the City of Manila (say, CP_{CM}), covering both cash and non-cash payments, we multiply the figures obtained in Step 1 by a differential rate, 1.399, obtained from the 1957 Family Income and Expenditures Survey (FIES)¹⁸, so that

$$CP_{CM} = 1.399 * X_{CM}.$$

Step 3: We propose that the City's personal consumption measure (or CP_{CM}) series holds the potential to serve as a basis for measuring the macro personal consumption of an entire country. To achieve this, we adopt two modifying procedures, (a) determining an appropriate blow-up factor to transform workers' average household expenditure data into a measure of the average overall household consumption of the City, and (b) downscaling the obtained factor to approximate the national level of macro consumption values. By following these two modifying procedures, we have estimated the figure we sought, arriving at a national macro consumption value equivalent to 0.52 times the CP_{CM} ¹⁹.

¹⁸ Cited in the footnote 7 above.

¹⁹ The following technical note presents a methodology to estimate the macro personal consumption of an entire country using the CP_{CM} (City Personal Consumption Measure) series as a basis. The approach involves two modifying procedures (a) and (b), which are detailed below.

Procedure (a): We begin by assuming that the workers' average household expenditure data in the City, as reported by our FES, may be used to approximate the average aggregate household expenditures of all households in the entire City of Manila. However, this requires applying a suitable blow-up factor to transform the workers' expenditure figure into one that represents the average overall household consumption of the City. (The issue of earning gap is of significant concern, particularly when dealing with the income distribution of the City of Manila. It is evident that the City's distribution of income was heavily skewed towards its high-ranking end, in contrast to the one observed for the entire nation, as indicated by the 1957 FIES survey result. It is reasonable to assume that a similar situation may have existed in the pre-1940 years, albeit to a lesser extent.)

To derive the blow-up factor, we turn to statistical information from the 1950s. *The Yearbook of Philippine Statistics 1958* (vol. IV, Manila, 1959, pp. 51g and 51) reveals that the weighted average wage of skilled and unskilled workers was 4.93 pesos

Step 4: We estimate macro personal consumption figures (C) by multiplying CP_{CM} by the estimated total numbers of households²⁰ and convert it to real terms (c) using a consumer price index (CPI). Dividing C and c by total population figures, we obtain macro personal consumption per capita in current and real pesos (C_{pc} and c_{pc}).

Figures 7 and 8 illustrate the series C and c , showing the long-run trend in the quality of life in the Philippine Islands during 1902-1941, as represented by monthly macro personal consumption per capita. In addition, Figure 9 attempts at experimentally connecting the findings up to 1941 with the post W.W.II data through 2021. The personal real consumption levels improved rapidly in the 1910s, reached a peak around 1918, experienced a sharp drop in the first half of the 1920s before it went up again until the sudden downswing due to the Great Depression in 1932, which finally showed signs of minor recovery in the 1930s. The finding in Figure 9 also indicates that the quality of life worsened drastically during the Pacific War but

per day or 1,773.8 pesos per year. (The average wages of 193 skilled and 918 unskilled workers were 5.77 and 4.75 pesos/day, respectively. Hence their weighted average was $(5.77*193+4.75*918)/(193+918) = 4.927192$. The skilled workers were composed of blacksmiths, carpenters, drivers, masons, mechanics and painter) .

By multiplying this wage figure by the average consumption propensity (ACP; total expenditures divided by total earnings, or 0.9651; see Table 5) of industrial workers in the City of Manila, observed in our FES for years 1909, 1927, 1932, 1934, and 1938, we obtain an estimated expenditure value of the average industrial workers' household, or 1,713.6 pesos per year. Next, we compare this figure with the Median expenditures of all citizens in the City of Manila, as reported in the 1957 FIES (Family Income and Expenditure Survey; see Table 6), which amounts to 2,690 pesos per year. The resulting differential between the expenditures of the entire residents' households and industrial workers' households in the City is found to be $2,690/1,867 = 1.441$. Therefore, this value serves as the blow-up factor needed for Procedure (b).

Procedure (b): In order to approximate the national level of macro consumption values, we downsize the previously obtained blow-up factor by considering the Median expenditure differentials between the City of Manila (964 pesos per year) and the entire Islands. Thus, the expenditure data of the City of Manila, obtained from our FES, should be multiplied by the rate of $1.441*(964/2,690) = 0.516$. (In the above procedures I have made use of Medians in lieu of weighted averages to avoid possible over-valuation of household expenditures that may result from the skewed income-expenditure distributions of the City, as noted previously.)

In conclusion, we have arrived at a national, macro consumption value of equivalent to $0.52CP_{CM}$.

²⁰ According to the national population censuses of 1902 and 1938, average, national household sizes were 5.2 and 5.3, respectively (no equivalent information is available from the 1918 census). We have estimated the annual household size (H_z) in the Islands between 1903 and 1937 by assuming that the size increased at an annual constant rate between the two censuses.

recovered quite significantly after the War²¹, especially following the 1960s.

—————Figures 7, 8 and 9 about here—————

6. Concluding Remarks: The Standard of Living in the Philippines, 1902-1941

The estimated values of combined trends in the Engel's coefficients in the City of Manila (sections 3 and 4) and the real personal consumption per capita of the Islands (section 5) suggest that the quality of life in the Philippine Islands improved in general over the very long run through the observation period. This, however, by no means prevents us from noticing that the living standard, as indicated by the actual Engel's coefficients, especially those of the City of Manila, experienced a period of downgrading in the 1910s as well as frequent up and down in the 1920s²². In addition, there were even some exceptional years when the working of the Engel's Law was negated. Diagrams in Figures 10 and 11 illustrate these overall time trends.

—————Figures 10 and 11 about here—————

In conclusion, the field data suggest that the quality of life of the Filipino citizens, especially in the City of Manila, recorded a moderate, long run trend of improvements during the first quarter of the twentieth century. However, this success story did not long continue after the initiation of the Commonwealth. The undeniable, continuous improvements in the standard of living of the nation had to wait until post-WWII development after the country's genuine political independence.

²¹ According to the *Economic Survey of Asia and the Far East* of the UN Economic Commission for Asia and the Far East, cited by Valdepeñas, Jr. and Bautista (1977, p.161), per capita food production level in 1950-51 was equal to that of 1934-38. This observation more or less supports, it seems, the pre-WWII levels of the real personal consumption estimates of the present paper in comparison to their post-WWII levels, as displayed in Figure 7.

²² The following remarks by Professor Doeppers along nicely go with this observation of the present writer. "Taken as a whole, 1900-1941 was a dynamic era. Broken down, it is clear that this dynamism was strongest during the two decades ending in the middle 1920s and again, briefly, during the late 1930s. It was less notable during the Great Depression and during other periodic slumps in the economy caused by declining American demand for Philippine commodities (Doeppers 1984, p.84)."

References cited

- Doeppers, Daniel F., *Feeding Manila in peace and war, 1850-1945*, Maddison: The University of Wisconsin Press, 2016.
- , *Manila, 1900-1941: social change in a late colonial metropolis*, 1984.
- Department of Labor, Commonwealth of the Philippines, “A study of the social and economic conditions of wage earners’ families in the City of Manila – 1938,” *Labor Bulletin*, vol. III, Nos. 5 & 6, May-June 1940, pp.155-178.
- Hooley, Richard, “A century of Philippine foreign trade: a quantitative analysis,” in E. DeDios and R. Fabelle, eds., *Choice, growth and development: essays in honor of Jose Encarnacion*, Quezon City: University of the Philippine Press, 1996, pp. 255-303.
- , “American economic policy in the Philippines, 1902-1940: Exploring a dark age in colonial statistics,” *Journal of Asian Economics*, 16, 2005, pp. 464-488.
- Houthakker, H.S., “An international comparison of household expenditure patterns, commemorating the centenary of Engel’s law,” *Econometrica*, vol. 25, no.4 , Oct. 1957, pp. 532-551.
- Nagano, Yoshiko, *Firipin keizai-shi kenkyū—tōgyō shihon to jinushi-sei* (in Japanese: A study in the Philippine economic history: sugar capitalism and landlord system) , Tokyo: Keisō Shobō, 1986.
- Valdepeñas, Jr., Vicente B., and Gemelino M. Bautista, *The emergence of the Philippine economy*, Manila, Papyrus Press, 1977.

Tables and Figures of a Report on
“Exploring the Engel's Law and Personal Consumption
in the Philippines, 1902~1940”¹

by

Konosuke Odaka

Institute of Economic Research

Hitotsubashi University

Tokyo

Outline²

1. Historical family expenditure survey (FES)
 - (1.1) Timing and the characteristics of historical FES
 - (1.2) Shortcomings of historical FES
2. Engel's law and Engel's coefficients
3. Overtime changes in Engel's coefficients: 1902-1941
4. Saving ratio as an indicator of standard of living
5. Family expenditure totals as a micro indicator of personal consumption of the nation
6. Concluding remarks: estimating the standard of living in the Philippine islands, 1902-1941

¹ Please do not cite or quote these tables and figures, as they are highly preliminary. The author may be reached at k-odaka@ier.hit-u.ac.jp.

² ‘Sources cited at the bottom of tales and figures refer to the author’s worksheet codes.

Table 1. Sources of historical family expenditure surveys (FES):
The Philippines, 1909-1941*

Years reported	Title of the data source	Issued or quoted by	Year published	Relevant pages
1909	<i>First annual report of the Bureau of Labor (Translation), Fiscal year 1910</i>	Gvt of the Philippine Islands, Dpt. of Commerce and Police, Bureau of Labor	1911	41-99
1910	<i>Bulletin of the Bureau of Labor</i> , Vol. VIII, No.26, March 1927	Gvt of the Philippine Islands, Dpt. of Commerce and Communications, Bureau of Labor	1927	93
1918	<i>Tenth annual report of the Bureau of Labor, For the fiscal year 1918, embracing the period from Jan. 1 to Dec. 31, 1918</i>	Gvt of the Philippine Islands, Dpt. of Commerce and Communications, Bureau of Labor	1919?	65-68
1920	<i>Twelfth annual report of the Bureau of Labor, For the fiscal year 1920, embracing the period from Jan. 1 to Dec. 31, 1920</i>	Gvt of the Philippine Islands, Dpt. of Commerce and Communications, Bureau of Labor	1921	28-33
1921	<i>Thirteenth annual report of the Bureau of Labor, For the fiscal year ending Dec. 31, 1921</i>	Gvt of the Philippine Islands, Dpt. of Commerce and Communications, Bureau of Labor	1922?	137-140
1925-26	<i>Bulletin of the Bureau of Labor</i> , Vol. VIII, No.26, March 1927	Gvt of the Philippine Islands, Dpt. of Commerce and Communications, Bureau of Labor	1927	91-93
1927	<i>Bulletin of the Bureau of Labor</i> , Manila, P. I., No.27, 1929	Gvt of the Philippine Islands, Dpt. of Commerce and Communications, Bureau of Labor	1930	151, 168*, 174
1930	<i>Twenty-second annual report of the Bureau of Labor, For the fiscal year ending Dec. 31, 1930</i>	Gvt of the Philippine Islands, Dpt. of Commerce and Communications, Bureau of Labor	1931?	109A
1932	<i>Twenty-fourth annual report of the Bureau of Labor, For the fiscal year ending Dec.31, 1932</i>	Gvt of the Philippine Islands, Dpt. of the Interior and Labor, Bureau of Labor	1933 ?	117-129
1934	<i>Twenty-sixth annual report of the Bureau of Labor, For the fiscal year ending Dec. 31, 1934</i>	Gvt of the Philippines, Dpt. of Labor, Bureau of Labor	1935?	50-53
1936	"Statistical report of fact-finding survey in four haciendas owned by religious corporations," 1936	Commonwealth of the Philippines, Dpt. of Labor	Unpublished	405, 450-451, 454-455, 462, 475-477
1938	<i>Labor bulletin</i> , vol. III, Nos.5 & 6, May/June 1940	Gvt of the Philippines, Dpt. of Labor, Bureau of Labor	1940	172-173
1938	"Report on financial and social conditions of labor in sugar centrals and plantations of Luzon and Mindanao," by the Office of the President, National Sugar Board, Manila, 1939, unpublished	永野善子『フィリピン経済史研究—糖業資本と地主制』勁草書房	1986	409-427
1938	<i>General standards of living and wages of workers in the Philippine sugar industry</i> , by I. T. Runes, Manila: Institute of Pacific Relations, Philippine Council, 1939	永野善子『フィリピン経済史研究—糖業資本と地主制』勁草書房	1986	427-437
1935-1941	<i>Yearbook of Philippine statistics 1946</i>		1947	251**

Source) EGC&Cnsmptn.Data.viii2023; file C13.

Notes) * Figures reported for the tobacco factory workers in 1927 by the *Bulletin* No.27 (March 1929), pp. 91-93, differ somewhat from those on p.168 of the same *Bulletin*.

** *Yearbook of Philippine Statistics 1946*, p.251 lists survey results only, with neither sample sizes nor households' earning figures.

Table 2. Locations and respondents of historical FES:
The Philippines, 1909-1938†

Year of survey	Location of survey	Type of respondents	Number of categories by which the respondents were classified††	Sample size: number of surveyed households
1909‡	City of Manila	Non-agrarian workers	21	474
1910	Manila & provincial cities	Industrial workers	2	?
1918	City of Manila	Skilled & common laborers	4	?
1920	City of Manila	Skilled & common laborers	4	?
1921	City of Manila	Skilled & common laborers	4	?
1925	Provincial cities	Industrial workers	14	?
1925*	City of Manila	Industrial workers	2	?
1927	City of Manila	Employees of the Insular government	6	283
1927	City of Manila	Industrial workers	10	111
1927	City of Manila	Cigar factory workers	5	763
1930	City of Manila	Skilled & unskilled workers	2	?
1932	City of Manila	Non-agrarian workers	42	146
1932	Provincial cities	Agrarian & non-agrarian workers	66	161
1934	City of Manila	Industrial workers	14	281
1936	Provincial haciendas	Share tenants	4	1,105
1936	Provincial haciendas	Farm laborers	4	313
1938	City of Manila	Skilled & unskilled workers	9	759
1938	Luzon & Mindoro	Sugar factory workers	16	210
1938	Suburban Manila	Refine sugar factory workers	11	31
1938	Luzon & Mindoro	Sugar plantation workers	8	316
		Grand total**	248	4,985

Source) EGC&Cnsmptn.Data.viii2023; file AA13.

Notes) † Excluding FES surveys on industrial workers in the City of Manila for years 1935 through 1941, which are reported in the *Yearbook of Philippines Statistics 1946*, list final statistical figures only.

†† The results of the surveys were assembled into statistical tables showing average figures by occupation, earning class and the like.

‡ Of the surveys listed herein only the 1909 survey reports respondents' individual data. The present study has excluded 105 of the total 474 respondents of the 1909 survey, whose meals (often housing also) were provided by their employers. Payments of poll and land taxes and union dues reported by the 1909 survey have been subtracted from its total expenditures.

* The 1925 figures for married respondents in Manila have been substituted by those surveyed in September 1926, being reported in *Bulletin of the Bureau of Labor*, vol. VIII, no.26 (March 1927), p.29

** In case sample size is unknown, the number of categories, in which the responses were recorded, has been used.

Table 3. Brief summary of FES findings: The Philippines, 1909~1941*

Year of survey	Location of survey, etc.	Average total number of household members	Average total monthly expenditures (pesos)	Average monthly expenditures on meals (pesos)	Average total monthly earnings (pesos)	Average monthly savings (pesos)	Average % of meals in total expenditures
Surveys reported prior to W.W.II**							
1909	City of Manila	3.38	28.57	16.56	35.99	7.42	58.69
1910	Manila & provincial cities	3.00	29.85	16.35			54.77
1918	City of Manila		64.06	39.75			62.06
1920	City of Manila		88.80	56.78			63.94
1921	City of Manila		60.15	33.60			55.86
1925	City of Manila		52.20	32.10			61.49
1925	Provincial cities	3.00	41.49	29.19			70.35
1927	City of Manila, government employees	5.08	101.49	49.03			49.21
1927	City of Manila, industrial workers	4.19	58.15	35.02	60.04	1.89	60.28
1927	City of Manila, cigar factory workers		49.95	34.83			69.81
1930	City of Manila		51.02	30.25			59.28
1932	City of Manila		42.03	23.52	40.87	-1.05	56.45
1932	Provincial cities		26.89	14.77	32.45	5.56	54.97
1934	City of Manila		29.58	16.89	28.61	-1.07	57.36
1936	Provincial haciendas	5.51	20.18	12.31	17.43	-2.75	60.90
1938	City of Manila, skilled & unskilled workers		34.83	20.14	34.56	-0.28	58.05
1938	Luzon & Mindoro, sugar factory workers		32.19	22.00	32.11	0.07	69.34
1938	Suburban Manila, refine sugar factory workers		29.92	19.61	37.77	7.86	65.60
1938	Luzon & Mindoro, sugar plantation workers		15.45	12.21	15.31	-0.14	79.22
Surveys reported in <i>the Yearbook of Philippine Statistics 1946</i>, p.251***							
1935			35.72	20.56			57.56
1936			34.27	19.55			57.05
1937			34.62	19.52			56.38
1938			35.65	20.14			56.49
1939			36.28	20.81			57.36
1940			37.99	21.94			57.75
1941			39.06	22.36			57.25

Source) EGC&Cnsmptn.Data.viii2023; fileAI13.

Notes) * No information available for blank cells. Average figures are weighted averages, weight being the number of observations in the respective categories of occupations, earning classes and the like, into which the respondents were classified.

** The number of pre-WWII observations totals 4,880; the 1936 survey results have not been published as of 2023.

*** Details about the surveys reported in the *1946 Yearbook* are unspecified. The 1938 survey outcomes printed in the *1946 Yearbook* are possibly the duplicates of the 1938 FES data reported in the Bureau of Labor's *Labor Bull-etin*, vol. III, 1940, since the latter's (presumably weighted) average figures are quite close to those of the former with the only exception of expenditure on shelter: 4.54 in the former and 3.72 (per month per household in 1939 pesos) in the latter.

Table 4. Effects of household-size (X_2) on expenditures on meals (f), as measured by ordinary-least-squares equations‡

Year	Occupation of respondents	Intercept	LN(x_1)	LN(X_2)	Adjusted R2	Number of observations	Average % of meals in total expenditures†	
							Actual	Estimated
1909	Non-agrarian workers	-0.35	0.93	0.03	0.85	21	58.69	57.88
		(-1.33)	(8.51)	(0.18)				
1927(1)	Government employees	0.75	0.51	0.34	0.99	6	48.85	48.32
		(3.76)	(2.87)	(5.97)				
1927(2)	Industrial workers	-0.46	0.95	0.09	0.64	10	60.00	59.96
		(-0.55)	(4.12)	(0.46)				
1936	Share tenants & farm laborers in haciendas	-0.85	0.99	0.24	0.66	8	62.91	62.28
		(-1.04)	(3.28)	(0.86)				

Source) EGC&Cnsmptn.Data.viii2023; fileAU13.

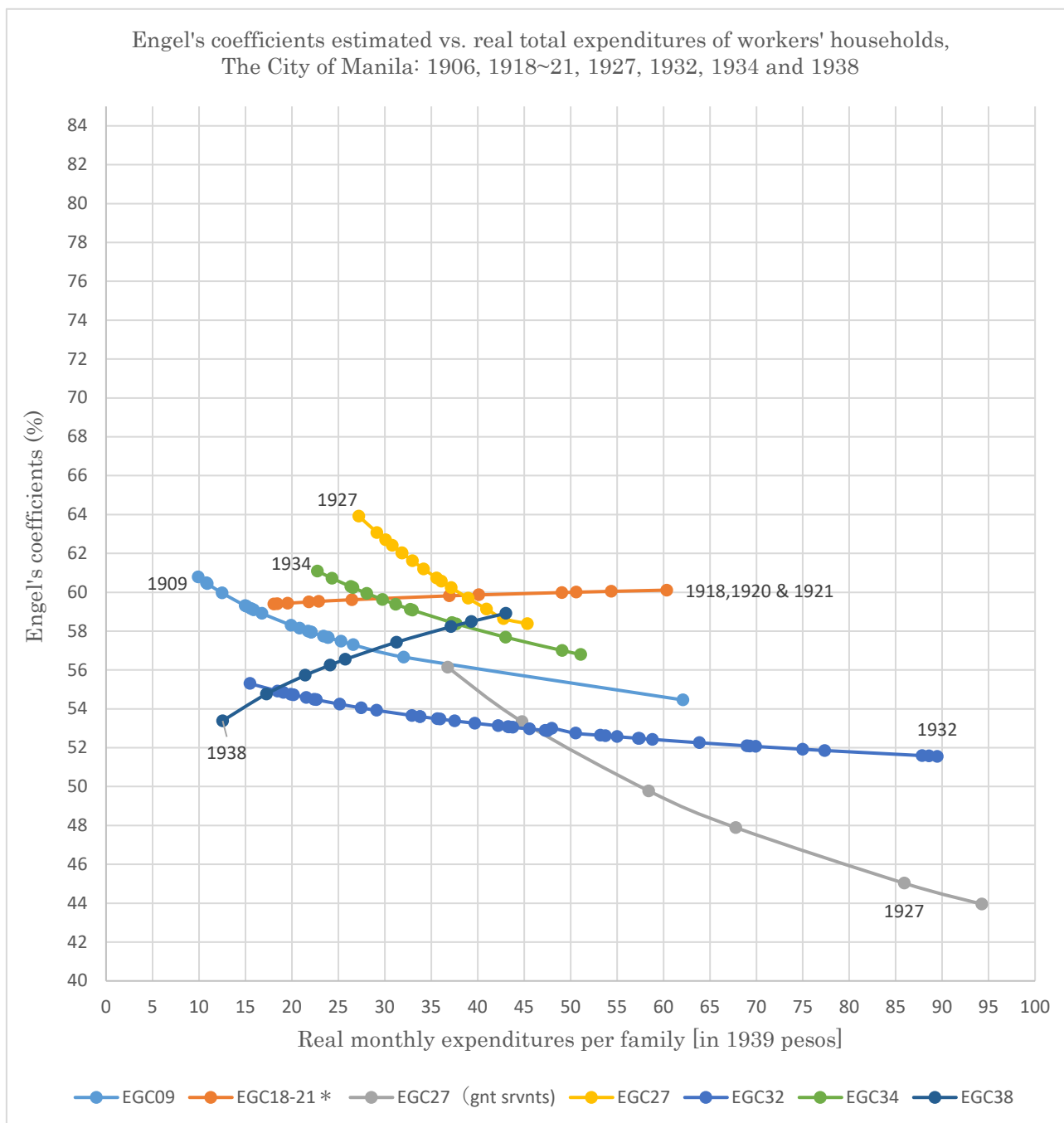
Notes) ‡ Computed as

$$\text{LN}(f) = \alpha + \beta \text{LN}(x_1) + \gamma \text{LN}(X_2),$$

where LN stands for natural logarithm, f for monthly expenditures on meals (in 1939 pesos), x_1 for monthly total expenditures (in 1939 pesos), X_2 for household size, and α , β and γ are parameters to be estimated. Figures in parentheses are Student's t statistics, and 'Adjusted R2' is the coefficient of determination adjusted for the degrees of freedom.

† Weighted average, weight being the number of observations in each category into which the respondents' answers were classified.

Fig. 1. Estimated Engel's coefficients in the City of Manila, 1909~1938†

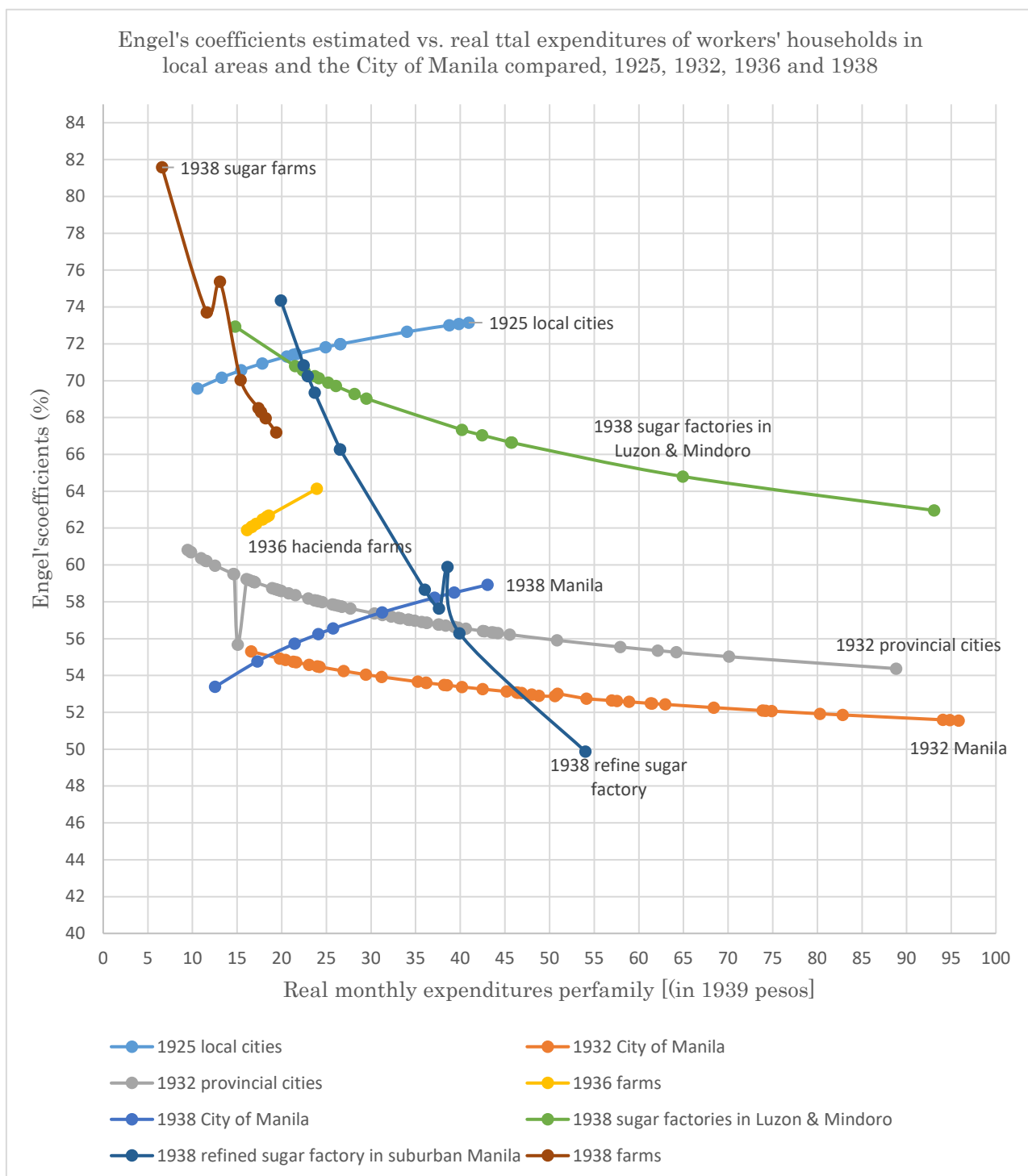


Source) EGC&CnsmptnRsIts.viii2023; file EGC curves AT14.

Note) * In drawing this diagram, the findings of three independent surveys of 1918, 1920 and 1921 years have been integrated to form a unit sample.

† Computation results for this diagram are reported in Appendix Table 1.

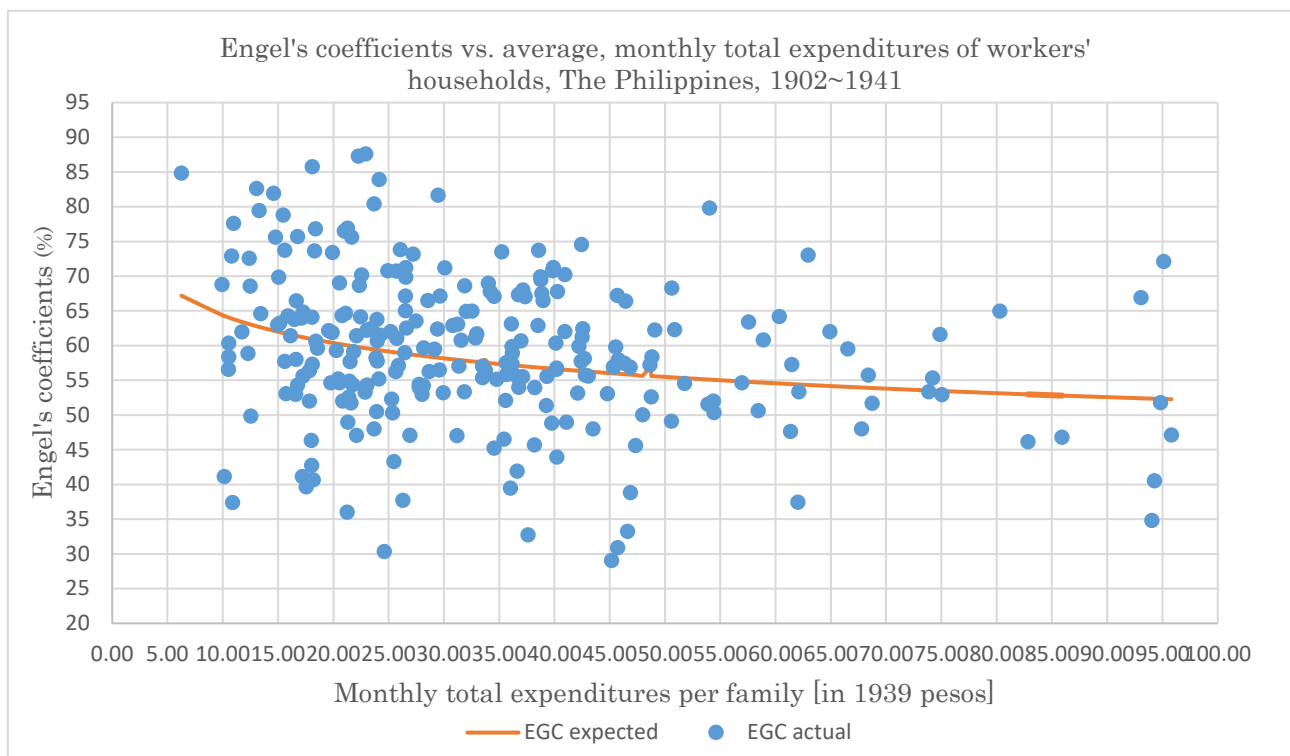
Fig. 2. Estimated Engel's coefficients:
Provincial areas vs. the City of Manila, 1925~1938†



Source) EGC&CnsmptnRsIts.viii2023; file EGC curves U14.

Note) † Computation results for this diagram are reported in Appendix Table. 2.

Figure 3. Engel’s coefficients of workers’ households in the Philippines, 1909~1941*



Source) EGC&CnsmptnRsIts.viii2023; file EGC curves FP35

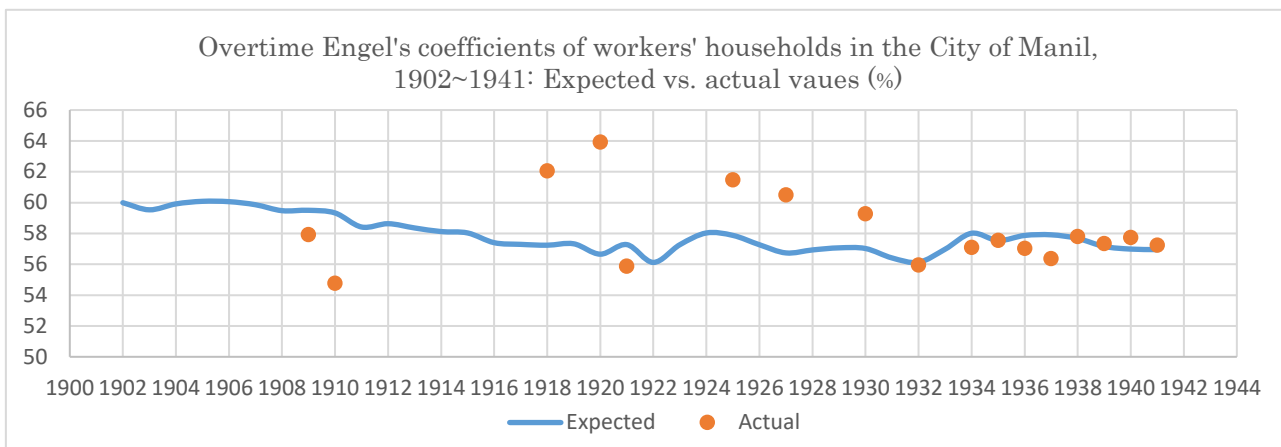
Notes) * Engel’s coefficients have been derived from the following OLS equation:

$$\text{Ln}(f) = -0.229 + 0.908 \text{Ln}(x) , n = 254, \text{ Adjusted } R^2 = 0.86, \\ (-2.86) \quad (38.98)$$

utilizing *all* the available, individual household observations of monthly meal consumption and of total expenditures, irrespective of their occupations or the places of residence. This data handling is based on the postulate that the Engel’s Law is applicable regardless of differences in race, timing or geographical locations, as long as price movements are controlled. Variables *f* and *x* denote estimated meal and total expenditures per household in 1939 pesos, respectively, and figures in parentheses t values.

In computing the above equation, the *Yearbook of Philippine Statistics 1946*, p.251, has provided the data for years 1935~1937 and 1939~1941. As it is highly likely that the *Yearbook* used for its 1938 values the same data as those of the Bureau of Labor, the only difference between them being the cost of housing, I have excluded the 1938 figures of the *Yearbook* in the above computation. Thus we have used 248 observations from our FES surveys plus 6 observations from the *Yearbook*.

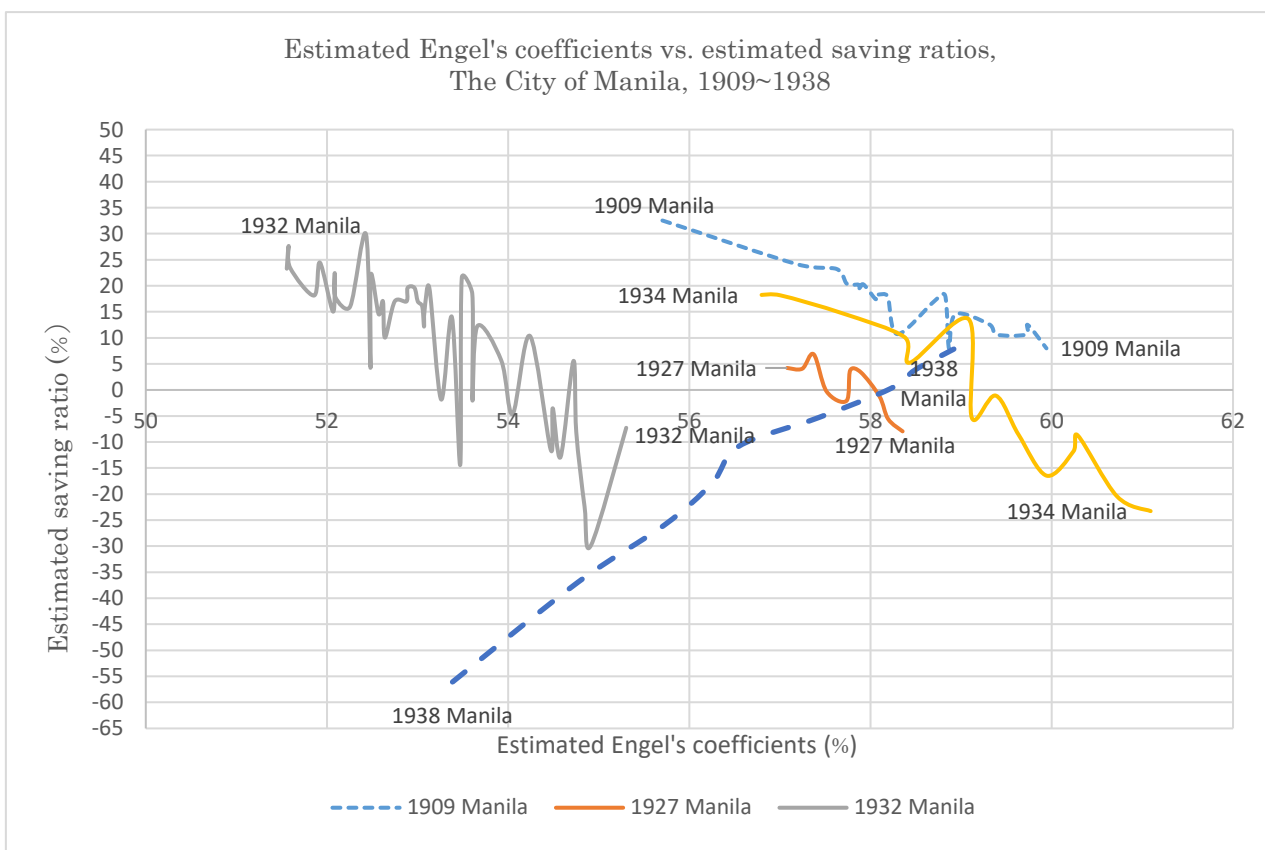
Figure 4. Overtime Engel's coefficients of workers' households:
The City of Manila, 1902~1941†



Source) EGC&CnsmptnRsIts.viii2023; file EGC curves 2 BO11.

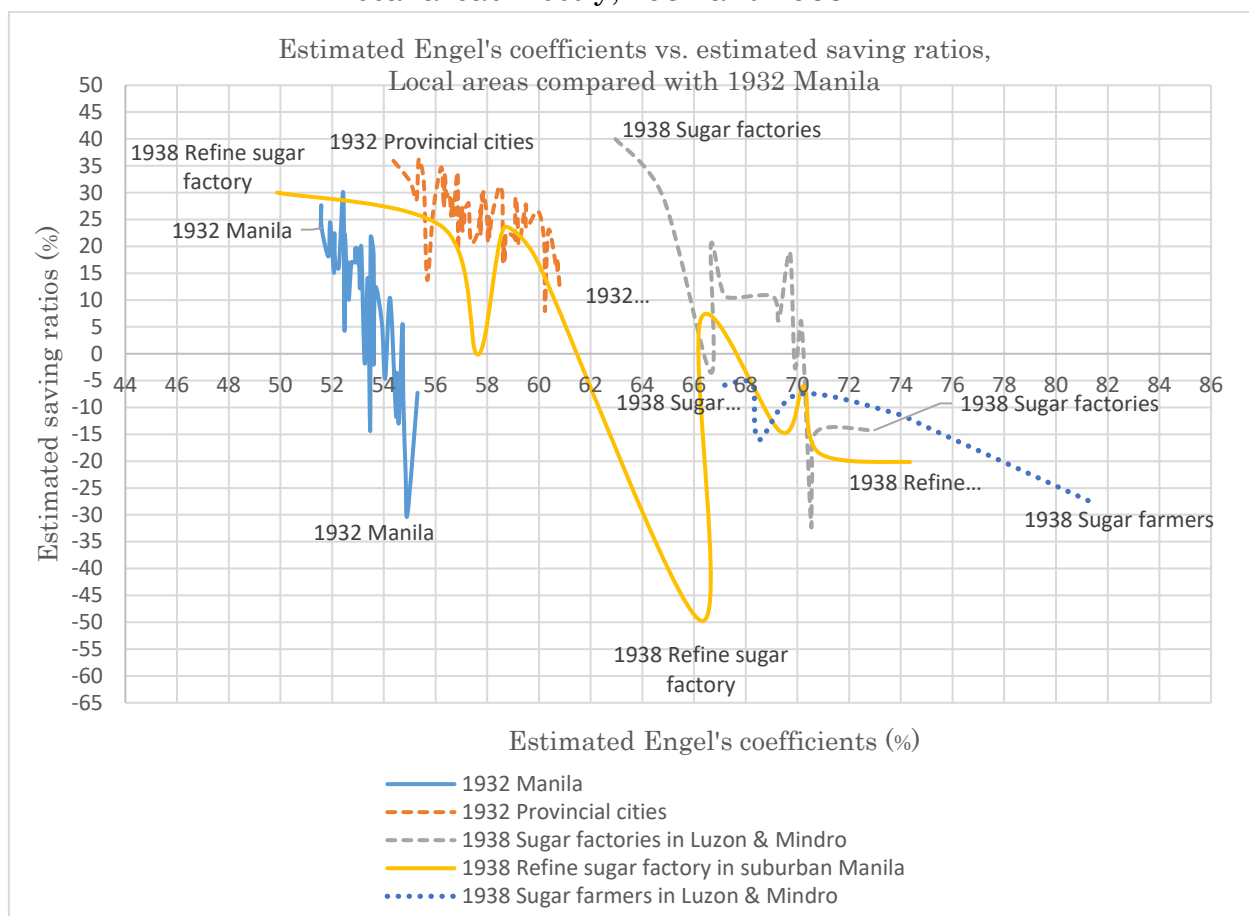
Notes) workers' households in the Philippines, 1909~1938

Fig. 5. Estimated values compared: Engel's coefficients and saving ratios,
The City of Manila, 1909~1938



Source) EGC&CnsmptnRsIts; file EGC & saving EC13.

Fig. 6. Estimated values compared: Engel's coefficients and saving ratios, local areas mostly, 1932 and 1938



Source) EGC&CnsmptnRslts; file EGC & saving EN13.

Note) The case of hacienda farms in 1936 is excluded, as its OLS regression has not yielded a statistically significant result, probably due to too small numbers each of observations from two distinctly differentiated occupations: share tenants and farm laborers.

Table 5. Family income and expenditures survey, the Philippines, 1957

Income class (thousand pesos/yr)	The Philippines			The City of Manila		
	Number of observa- tions	Average income (thousand pesos/yr)	Average expendi- tures (thousand pesos/yr)	Number of observa- tions	Average income (thousand pesos/yr)	Average expendi- tures (thousand pesos/yr)
~499	890	348	398	4	348	609
500-624	378	562	585	4	563	722
625-749	343	683	671	6	690	834
750-874	306	808	785	8	798	1,132
875-999	255	937	861	6	930	1,217
1000-1249	389	1,119	1,004	15	1,135	1,278
1250-1499	265	1,373	1,229	22	1,382	1,560
1500-1749	242	1,623	1,389	21	1,626	1,722
1750-1999	172	1,867	1,605	23	1,875	1,870
2000-2499	205	2,225	1,871	31	2,226	2,303
2500-2999	133	2,738	2,305	26	2,737	2,607
3000-3999	162	3,435	2,829	41	3,428	3,411
4000-4999	64	4,440	3,703	19	4,472	4,273
5000~	154	9,147	7,198	72	10,406	8,680
Σ	3,958	31,305	26,433	296	32,616	32,218
Weighted average		1,471	1,285		4,260	3,869
Median		1,057	964		2,640	2,690

Source) EGC&Cnsmptn.Data.viii2023; fileRltd infrmtn G7.

Data) Philippine Statistical Survey of Households, Bureau of the Census and Statistics, National Economic Council, *The Philippine statistical survey of households bulletin*, series No.4, Manila: March 1957, p.22.

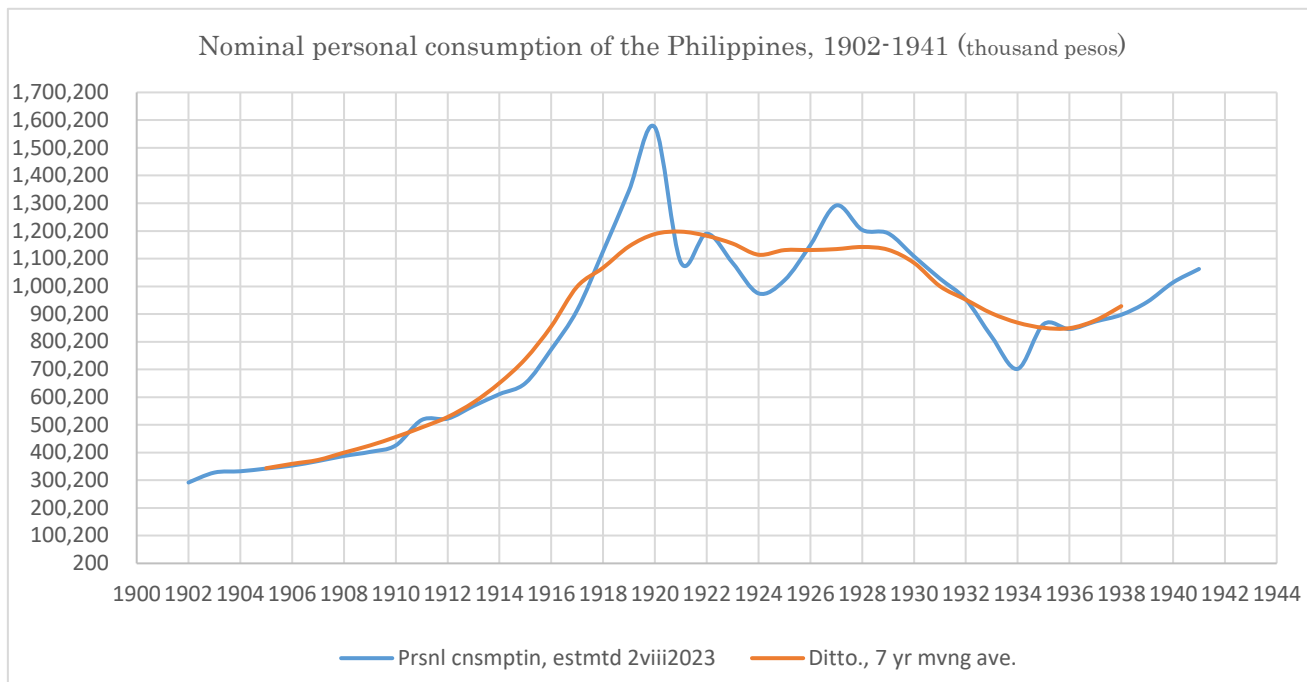
Table 6 . Average consumption propensities (ACP) of Filipino workers' households, derived from FES†

Location /Year	Manila City		Provincial cities		Sugar factories				Farming areas			
	Number of observations	ACP	Number of observations	ACP	Luzon & Mindoro		Suburban Manila		Laborers		Tenants	
					Number of observations	ACP	Number of observations	ACP	Number of observations	ACP	Number of observations	ACP
1909	365	0.79										
1925												
1927	111	0.97										
1932	146	1.03	161	0.83								
1934	281	1.04										
1936									1,105	1.21		
1936											313	0.98
1938	759	1.01			210	1.00	31	0.79	316	1.01		

Source) EGC&Cnsmptn.Data.viii2023; fileBN37.

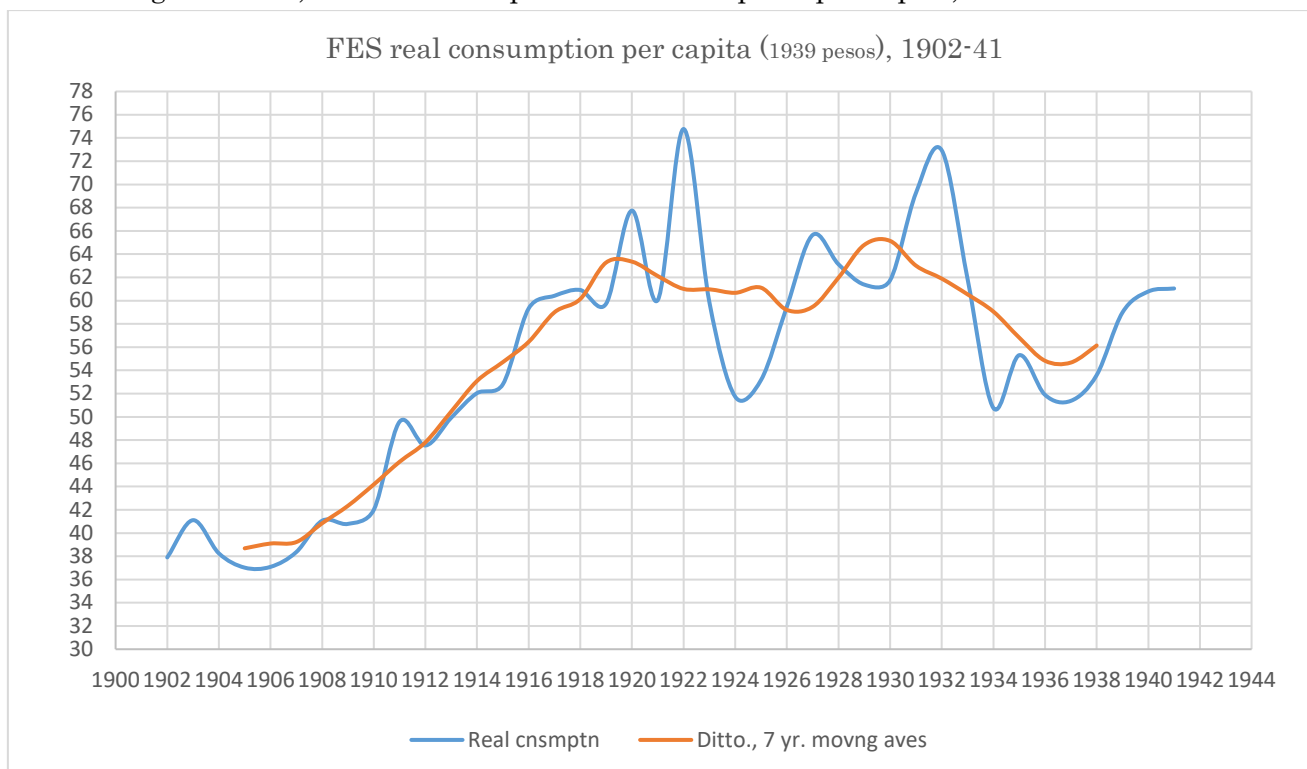
Note) † Average consumption propensity is defined here as total household expenditures divided by total household earnings. It is well to note, however, that the degree of underreporting of the latter is likely to be greater than that of the former.

Figure 7. Nominal, annual macro personal consumption, 1902-1941



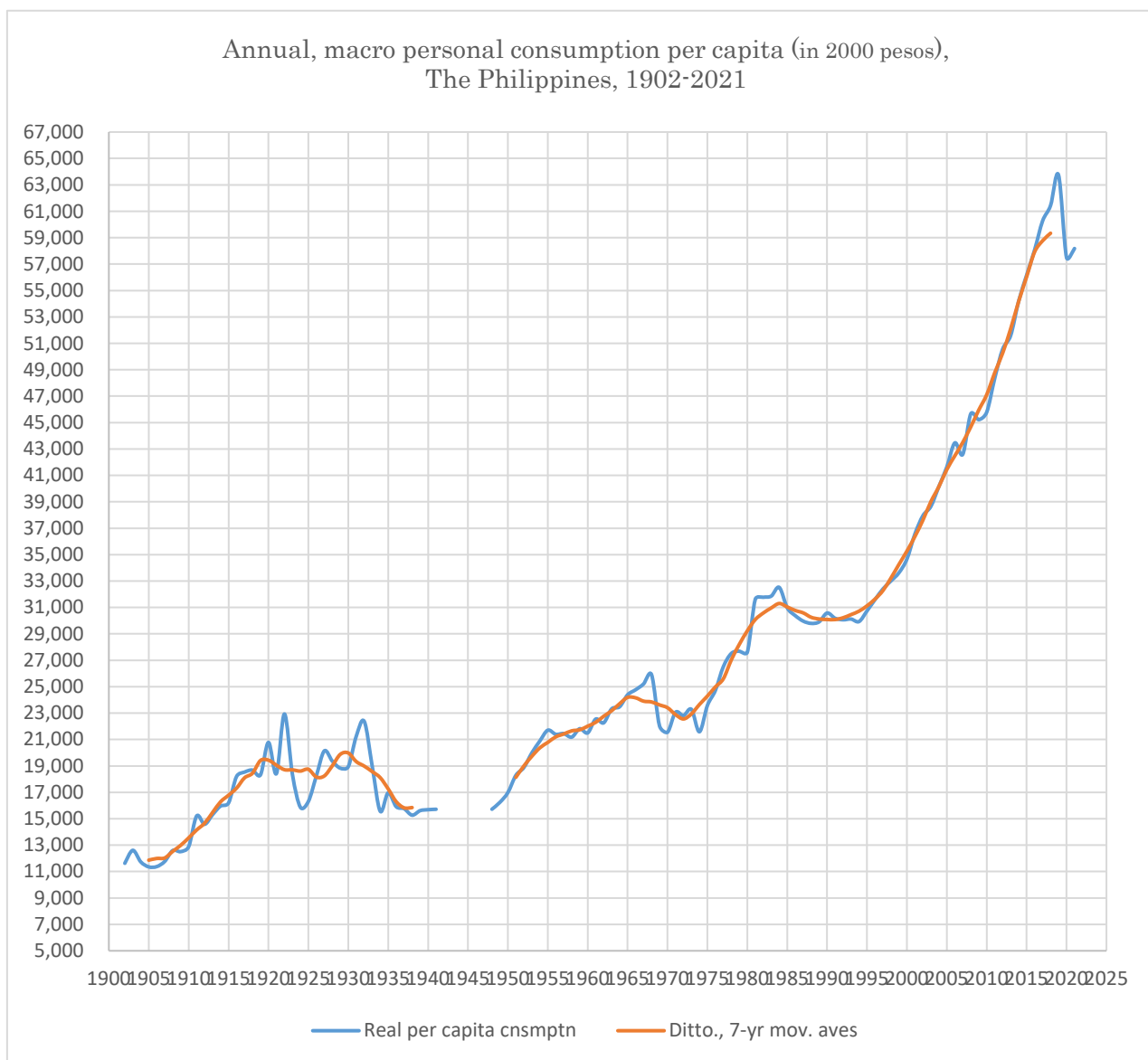
Source) EGC&CnsmptnRslts.viii2023; Cnsmptn curves O58.

Fig. 8. Real, annual macro personal consumption per capita, 1902-1941



Source) EGC&CnsmptnRslts.viii2023; Cnsmptn curves AP58.

Figure 9. Real, annual personal consumption per capita
(in 2000 pesos), 1902-2021



Source) EGC&CnsmptnRsIts.viii2023; Lngrn cnsmptn O58.

Notes) Derivation of Personal Consumption in Current Million Pesos from 1948 to 2022:

(1) The annual consumption data for 1960-1973 are sourced from the National Economic Development Authority (NEDA)'s *Statistical Yearbook 1975*, pages 94-95.

(2) Consumption data for the years 1955, 1960, 1965, 1970, 1972, and 1974-1985 are available in the NEDA's *Statistical Yearbook 1986*, pages 148-149. However, there is a discrepancy between the figures in (1) and (2). For

this derivation, we have opted to use the series from (2) and have interpolated the missing values by assuming constant rates of change between the available figures.

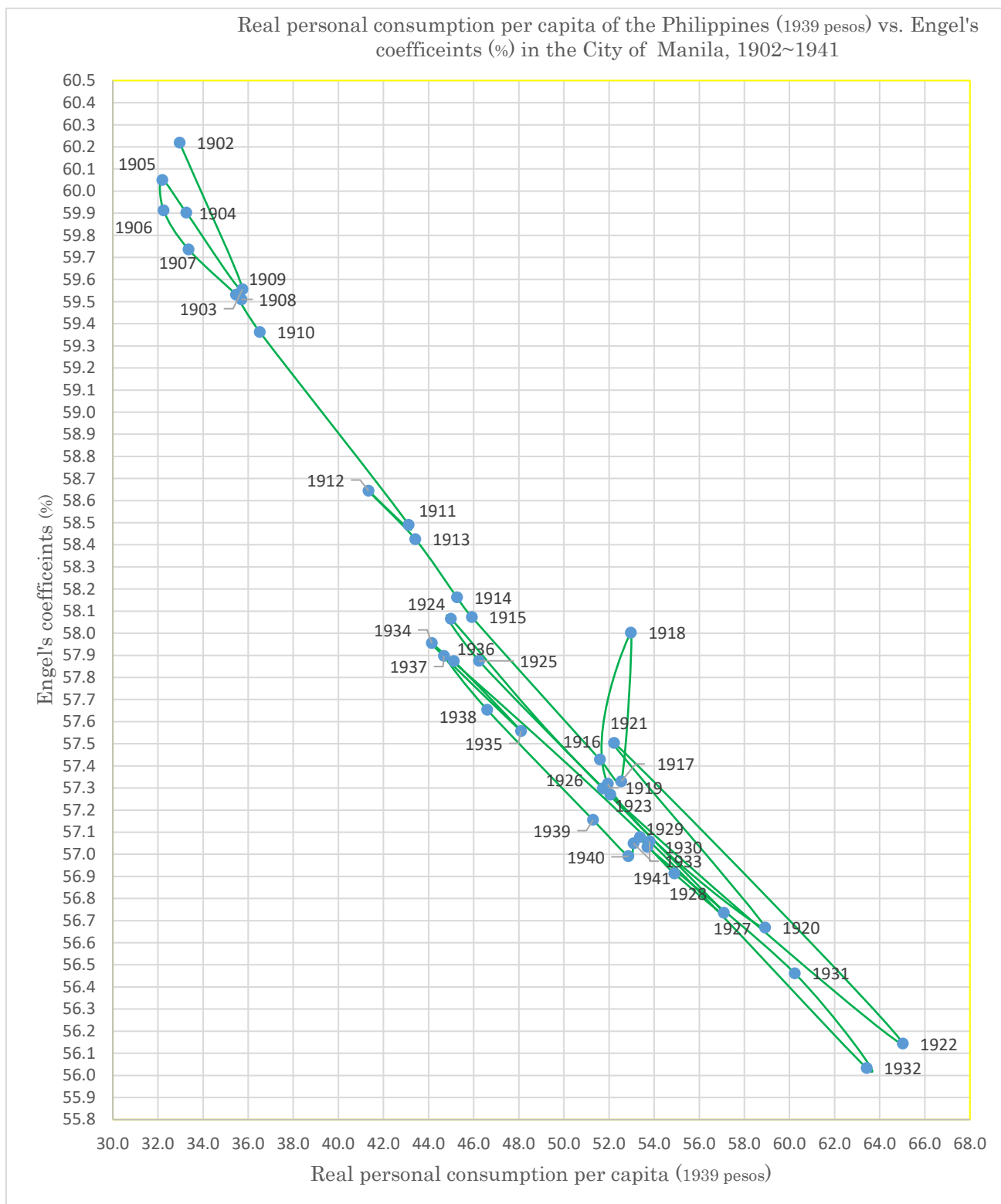
(3) Quarterly macro personal consumption in current million pesos for the years 1981-2022 are obtained from the website of the Central Bank of the Philippines (CBP) and converted into annual series.

(4) While the consumption figures for 1981-1984 are available from both NEDA and CBP sources, they do not agree; the latter being consistently smaller than the former by an average of 0.8355. To reconcile these discrepancies, we have aligned the CBP series to the NEDA series at the year 1980. We achieved this by downscaling the previously interpolated NEDA series (2) above by a factor of 0.8355, thus completing the annual personal consumption time-series in current million pesos for the years 1955 through 2022.

(5) For the years 1948-1954, Hooley's adjusted current GDP figures, as quoted in Odaka (2023c), have been multiplied by the estimated average consumption propensity. This average consumption propensity is calculated as CBP's nominal consumption in (3) above, divided by Hooley's nominal GDP for 1955, which yields approximately 0.846.

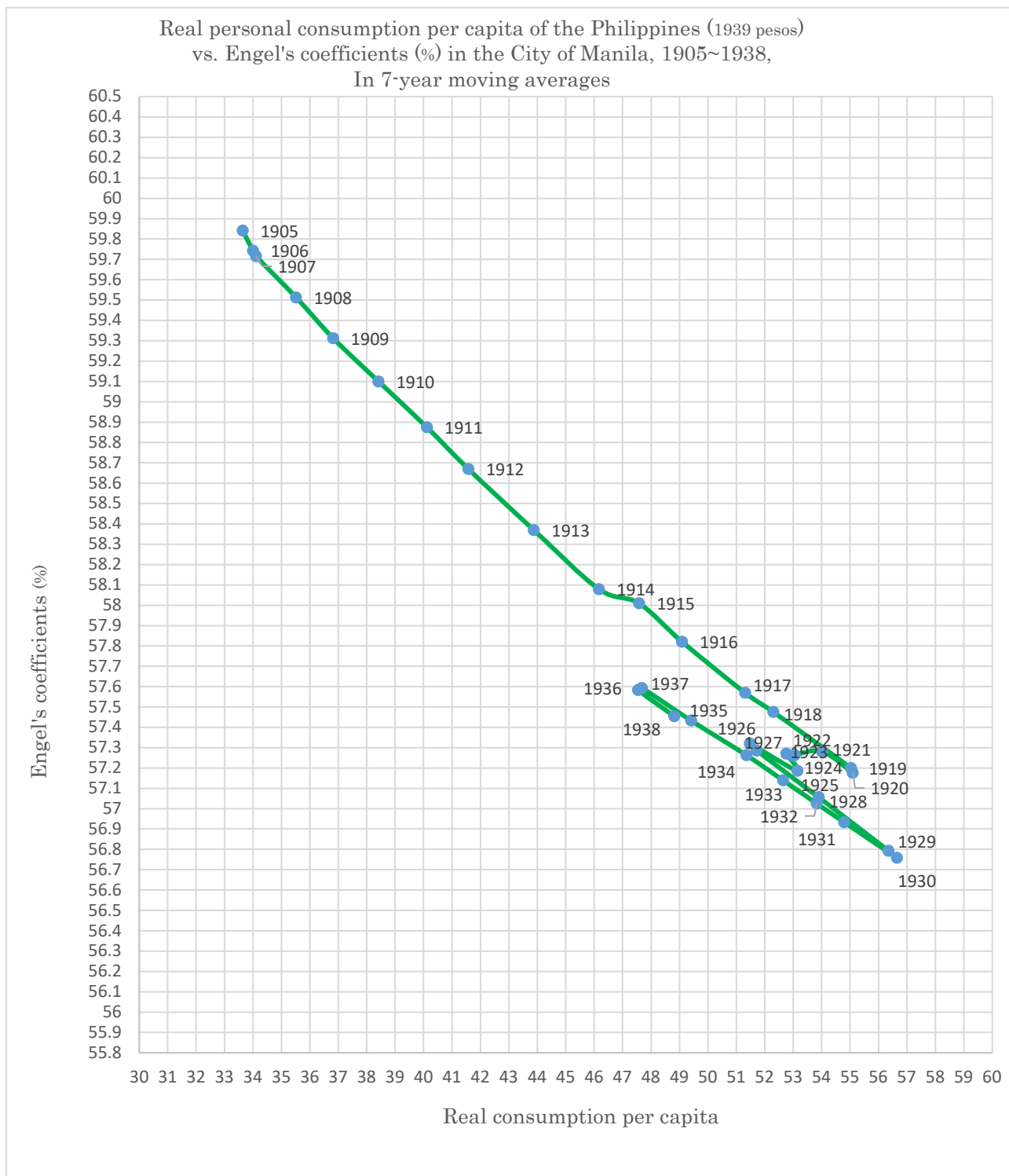
(6) To establish the long-run Consumer Price Index (CPI) for the years 1902 through 2021 (with the base year 2000 = 100), a composite series has been prepared. The composite series connects: (i) the CPI for the period of 1937-1949 (with the base year 1937 = 100, with missing values for 1942-1944), as reported in CBP's First Annual Report, 1948, pages 285-286, (ii) the later CPI series provided by the CBP, and (iii) adjusted Hooley's GDP deflator for 1902-1941 (with the base year 1939 = 1.0). This process is documented in Odaka (2023b).

Figure 10. Real personal consumption per capita of the Philippines vs. Engel's coefficients in the City of Manila, 1902~1941



Source) MacroCnsmptn.vii2023; file Cnsmptn estII 2023 FV12.

Figure 11. Real personal consumption per capita of the Philippines vs. Engel's coefficients in the City of Manila, In 7-year moving averages, 1905~1938



Source) MacroCnsmptn.vii2023; file Cnsmptn estII 2023 FV39.

Appendix Table 1. Engel curves derived by OLS regressions※,
using historical FES, with data in 1939 pesos

Year	Area surveyed	Occupation of respondents	Intercept	LN(x_1)	Adjusted R2	Number of observations	Average EGC (%)†	
							Actual	Estimated
1909	Manila	Non-agrarian workers	-0.36 (-1.39)	0.94 (10.90)	0.85	21	58.69	58.12
1918-21	Manila	Industrial workers	-0.55 (-3.06)	1.01 (19.48)	0.97	12	60.43	59.73
1925	Provincial cities	Industrial workers	-0.45 (-1.88)	1.03 (13.65)	0.93	14	70.26	71.65
1927(1)	Manila	Government employees	0.36 (1.47)	0.74 (12.58)	0.97	6	49.21	49.30
1927(2)	Manila	Industrial workers	0.53 (0.83)	0.72 (4.02)	0.52	15	68.60	64.67
1932	Manila	Industrial workers	-0.48 (-2.11)	0.96 (16.32)	0.87	42	52.58	53.04
1932	Provincial cities	Industrial workers	-0.45 (-2.35)	0.95 (16.74)	0.81	66	54.97	57.94
1934	Manila	Industrial workers	-0.26 (-0.85)	0.91 (10.60)	0.90	14	57.36	59.78
1936	Manila	Tenants & farm laborers	-0.73 (-0.92)	1.09 (3.98)	0.66	8	60.90	62.67
1938	Manila	Industrial workers	-0.83 (-4.63)	1.08 (19.70)	0.98	9	58.05	57.58
1938	Luzon & Mindoro	Sugar factory workers	-0.10 (-0.37)	0.92 (12.15)	0.91	16	69.34	67.11
1938	Suburban Manila	Refine sugar factory workers	0.90 (0.93)	0.60 (2.09)	0.25	11	65.60	67.47
1938	Luzon & Mindoro	Sugar farm workers	0.18 (0.70)	0.82 (8.22)	0.90	8	79.22	70.32

Source) EGCrev.iv2023; file EGCestCrssSctnGrph2023 BL12.

Notes) ※ The dependent variable is LN(f) (or natural log of meal expenditures)

‡ x_1 stands for real total expenditures (in 1939 pesos). Figures in parentheses are Student's t statistics, and 'Adjusted R2' is the coefficient of determination adjusted for the degrees of freedom.

† Weighted average, weight being the number of observations in each category into which the respondents' answers were classified.

Appendix Table 2. Household consumption functions estimated,
1909~1938§

Year	Area surveyed	Occupation of respondents	Intercept	LN(<i>e</i>)	Adjusted R squared	Number of observations	Average saving rate (%)	
							Actual†	Estimated†
1909	Manila	Non-agrarian workers	0.35 (1.25)	0.84 (9.98)	0.83	21	7.42	7.59
1927	Manila	Industrial workers	1.18 (1.50)	0.71 (3.66)	0.58	10	1.89	0.82
1932	Manila	Industrial workers	0.96 (2.92)	0.72 (8.46)	0.63	42	-1.35	4.35
1932	Provincial cities	Industrial workers	0.38 (0.97)	0.82 (7.44)	0.46	66	5.54	8.25
1934	Manila	Industrial workers	-0.26 (-0.85)	0.91 (10.60)	0.90	14	0.98	1.18
1938	Manila	Industrial workers	-0.83 (-4.63)	1.08 (19.70)	0.98	9	-0.24	-0.65
1938	Luzon & Mindoro	Sugar factory workers	-0.10 (-0.37)	0.92 (12.15)	0.91	16	-0.12	2.64
1938	Suburban Manila	Refine sugar factory workers	-0.33 (-0.30)	0.95 (2.96)	0.44	11	6.80	3.10
1938	Luzon & Mindoro	Sugar farm workers	0.18 (0.70)	0.82 (8.22)	0.90	8	-0.26	-2.25

Source) EGC&CnsmptnRsIts; file Saving rates IU 13.

Notes) § Hacienda farmers have been excluded here, as their computational results were insignificant. The functional form estimated is

$$\text{LN}(c) = \alpha + \beta \text{LN}(e) + \varepsilon,$$

where *c* stands for real consumption, *e* real earnings, α and β estimated parameters, ε statistical disturbances, and figures in parentheses stand for Student's *t* statistics. Estimated saving is equal to *e* minus the estimated *c*.

† Weighted averages (weight being the number of observations).

○ Household Expenditures and Earnings of Workers' Families, the Philippines, 1902-1938:
A Summary of the Family Expenditure Survey Conducted (mostly) by the Bureau of Labor, the Philippine Government *

Estimated statistical data for reference

ID	Year of survey	Type of household & location of survey	Occupation or earning level of respondent	Number of observations [§]	X2: Number of dependents including respondent	X1: Total expenditures (per family/ month, pesos)	F: Expenditure on meals (per family/ month, pesos)	E: Total earning (per family/ month, pesos)	S: Saving (per family/ month, pesos) [§]	EGC: Engel's coefficient ‡ (%)	Year	Hooley's GDP deflator, adjusted by Orlaya, v2023 [39=1] †	Hooley's wage rate, private skilled & unskilled [39=1] †	
					X2	X1	F	E	S	EGC(%)‡				
1	1909	Nvagr. wrks, Manila	Aparatistas	25	2.76	18.37	11.57	20.70	2.32	62.99	1902	1.015	0.67	
2	1909	"	Barbers	30	3.27	26.67	14.50	31.59	4.92	54.37	1903	1.045	0.75	
3	1909	"	Carriers	32	2.72	19.49	12.53	31.14	11.65	64.28	1904	1.136	0.76	
4	1909	"	Carpenters	30	4.20	32.63	20.40	46.58	13.95	62.51	1905	1.201	0.78	
5	1909	"	Cigar makers	22	3.68	27.09	16.64	29.58	2.49	61.41	1906	1.227	0.80	
6	1909	"	Cigarette packers	17	1.88	19.14	11.05	14.98	-4.16	57.73	1907	1.228	0.83	
7	1909	"	Coal passers	1	2.00	13.37	5.00	18.00	4.63	37.41	1908	1.186	0.86	
8	1909	"	Cooks	11	4.09	25.56	13.30	30.73	5.16	52.04	1909	1.219	0.88	
9	1909	"	Drivers	16	3.19	18.58	11.74	23.78	5.20	63.20	1910	1.234	0.86	
10	1909	"	Hatmakers	22 (13)	2.95	20.56	11.17	28.45	7.89	54.32	1911	1.245	0.95	
11	1909	"	Helmsmen	3	4.00	15.31	10.50	18.00	2.69	68.58	1912	1.282	0.94	
12	1909	"	Machinists	20	6.55	76.14	40.64	104.37	28.23	53.38	1913	1.296	1.00	
13	1909	"	Labelers	7	2.29	24.42	17.93	18.12	-6.30	73.41	1914	1.302	1.05	
14	1909	"	Printers	18	3.72	29.25	17.05	33.12	3.86	58.26	1915	1.329	1.09	
15	1909	"	Sailors	4	4.00	12.17	8.38	15.00	2.83	68.81	1916	1.365	1.26	
16	1909	"	Sea firemen	5	3.40	27.09	12.75	31.60	4.51	47.07	1917	1.539	1.45	
17	1909	"	Servants	2	1.50	13.26	9.67	20.50	7.24	72.89	1918	1.793	1.58	
18	1909	"	Shoe-makers	29 (1)	3.48	31.01	16.22	36.98	5.97	52.30	1919	2.181	1.81	
19	1909	"	Silversmith	26 (2)	4.15	28.72	17.93	36.80	8.08	62.43	1920	2.225	2.01	
20	1909	"	Streetcar employees	16	2.63	39.28	25.50	49.98	10.71	64.93	1921	1.696	2.18	
21	1909	"	Tailors	29	2.93	29.34	14.82	36.49	7.15	50.52	1922	1.460	1.97	
Total number of observations & weighted averages †				365	3.44	28.57	16.56	35.99	7.42	58.69	1923	1.625	1.76	
22	1910	Idrl wrks Manila & prvel cty	Single laborer	1	1.00	22.50	12.90			57.33	1924	1.652	1.55	
23	1910	"	Family of 5	1	5.00	37.20	19.80			53.23	1925	1.648	1.34	
Total number of observations & averages				2	3.00	29.85	16.35			54.77	1926	1.619	1.34	
24	1918	Idrl wrks, Manila	Skilled: single	1	1.00	40.53	25.20			62.18	1927	1.612	1.34	
25	1918	"	Skild: mrrid w/3 sns	1	5.00	101.66	63.30			62.27	1928	1.526	1.30	
26	1918	"	Cmmn lbr, singl	1	1.00	37.44	24.00			64.10	1929	1.518	1.26	
27	1918	"	Cmmn, mrrid w/3 sns	1	5.00	76.59	46.50			60.71	1930	1.371	1.22	
Total number of observations & averages				4	3.00	64.06	39.75			62.06	1931	1.107	1.18	
28	1920	Idrl wrks, Manila	Skilled: single	1	1.00	59.01	34.80			58.97	1932	0.952	1.14	
29	1920	"	Skild: mrrid w/3 sns	1	5.00	134.58	86.40			64.20	1933	0.941	1.11	
30	1920	"	Cmmn lbr, singl	1	1.00	48.72	28.80			59.11	1934	0.962	1.08	
31	1920	"	Cmmn, mrrid w/3 sns	1	5.00	112.89	77.10			68.30	1935	1.060	1.06	
Total number of observations & averages				4	3.00	88.80	56.78			63.94	1936	1.081	1.04	
32	1921	Idrl wrks, Manila	Skilled: single	1	1.00	40.53	21.60			52.29	1937	1.101	1.02	
33	1921	"	Skild: mrrid w/3 sns	1	5.00	96.33	50.10			52.01	1938	1.059	1.01	
34	1921	"	Cmmn lbr, singl	1	1.00	32.64	19.80			60.66	1939	1.000	1.00	
35	1921	"	Cmmn, mrrid w/3 sns	1	5.00	71.09	42.90			60.35	1940	1.014	0.96	
Total number of observations & averages				4	3.00	60.15	33.60			55.86	1941	1.036	1.00	
36	1925	Idrl wrks, Manila	Single	1	1.00	34.80	22.50			64.66				
37	1926	"	Fmly of 5, ix 1926	1	5.00	69.60	41.70			59.91				
Total number of observations & averages				2	3.00	52.20	32.10			61.49				
38	1925	Idrl wrks, prvel cty	Single, San Jose, Antique	1	1.00	17.40	10.50			60.34				
39	1925	"	Single, Legaspi, Albay	1	1.00	35.10	27.00			76.92				
40	1925	"	Single, Cebu, Cebu	1	1.00	29.40	15.30			52.04				
41	1925	"	Single, Davao, Davao	1	1.00	33.90	23.40			69.03				
42	1925	"	Single, Iloilo, Iloilo	1	1.00	35.70	27.00			75.63				
43	1925	"	Single, Laog, Ilocos Norte	1	1.00	21.90	17.40			79.45				
44	1925	"	Single, San Fernando, La Union	1	1.00	25.50	20.10			78.82				
45	1925	"	Fmly of 5, San Jose, Antique	1	5.00	43.80	31.20			71.23				
46	1925	"	Fmly of 5, Legaspi, Albay	1	5.00	67.50	47.40			70.22				
47	1925	"	Fmly of 5, Cebu, Cebu	1	5.00	56.10	38.70			68.98				
48	1925	"	Fmly of 5, Davao, Davao	1	5.00	65.70	46.50			70.78				
49	1925	"	Fmly of 5, Iloilo, Iloilo	1	5.00	63.90	44.40			69.48				
50	1925	"	Fmly of 5, Laog, Ilocos Norte	1	5.00	41.10	29.10			70.80				
51	1925	"	Fmly of 5, San Fernando, La Union	1	5.00	43.80	30.60			69.86				
Total number of observations & weighted averages				14	3.00	41.49	29.19			70.35				
52	1927	Employees of Instr Gvt	P1800 to P2400 per year	31	5.51	151.91	61.56	?	?	40.53				
53	1927	"	P1500 and under P1800 "	18	6.22	138.44	64.83	?	?	46.83				
54	1927	"	P1200 and under P1500 "	83	5.36	109.22	52.45	?	?	48.03				
55	1927	"	P900 and under P1200 "	72	5.16	94.14	47.67	?	?	50.63				
56	1927	"	P600 and under P900 "	77	4.09	72.18	38.32	?	?	53.09				
57	1927	"	Under P600	2	3.00	59.25	32.00	?	?	54.01				
Total number of observations & weighted averages				283	5.08	101.49	49.03			49.21				
58	1927	Idrl wrks, Manila	Painters	8	3.13	73.08	41.62	67.89	-5.19	56.95				
59	1927	"	Chauffeurs	10	4.90	68.95	38.43	67.54	-1.41	55.73				
60	1927	"	Mechanics	16	4.06	65.98	40.91	74.70	8.73	62.01				
61	1927	"	Tile workers	10	5.10	62.79	41.75	57.92	-4.87	66.48				
62	1927	"	Carpenters	7	4.29	58.18	36.74	54.45	-3.73	63.14				
63	1927	"	Shoemakers	9	5.00	57.36	29.89	66.80	9.44	52.12				
64	1927	"	Printers	10	4.00	55.10	37.34	65.93	10.83	67.78				
65	1927	"	Cabinet makers	11	3.36	51.32	27.38	56.13	4.81	53.34				
66	1927	"	Slipper makers	18	4.39	49.66	31.23	48.52	-1.14	62.89				
67	1927	"	Carriers	12	3.67	47.00	27.96	44.93	-2.07	59.48				
Total number of observations & weighted averages				111	4.19	58.15	35.02	60.04	1.89	60.28				
68	1927	Cgr fctry wrks, Manila	>P12/d	14		53.16	32.80			61.70				
69	1927	"	P10-11.99/d	21		59.88	40.72			68.00				
70	1927	"	P7-9.99/d	376		51.36	35.24			68.61				
71	1927	"	PP5-6.99/d	295		48.48	34.52			71.20				
72	1927	"	P3-4.99/d	57		43.84	32.08			73.18				
Total number of observations & weighted averages				763		49.95	34.83			69.81				
Totals of the City of Manila for 1927:														
Total number of observations & weighted averages				1,157		63.34	38.32			63.86				
73	1930	Married, skilled, Manila	(1) Skilled	1		58.66	34.12			58.17				
74	1930	Married unskilled, Manila	(2) Unskilled	1		43.38	26.37			60.79				
Total number of observations & averages				2		51.02	30.25			59.28				
75	1932	Singl idstrl wrks, Manila	Typesetter	1		44.82	22.42	60.00	15.18	50.02				
76	1932	"	Vamper (shoemaking)	1		29.13	13.70	38.00	8.87	47.03				
77	1932	"	Carpenters	1		25.16	11.85	45.60	20.44	47.10				
78	1932	"	Cutter of lining (shoemakin)	3		22.65	13.93	20.93	-1.72	61.52				
79	1932	"	Common laborer	4		22.41	13.60	27.25	4.84	60.69				
80	1932	"	Fitter (shoemaking)	3		21.54	11.70	20.00	-1.54	54.31				
81	1932	"	Cabinet maker	2		20.19	10.45	37.80	17.61	51.76				
82	1932	"	Varnisher	11		19.90	9.75	23.36	3.46	48.97				
83	1932	"	Tailor	15		19.09	10.54	15.00	-4.09	55.21				
84	1932	"	Cigarmaker	3		18.48	10.10	12.13	-6.35	54.65				
85	1932	"	Apprentice typesetter	1		15.49	8.21	24.00	8.51	53.00				
86	1932	Mixed idstrl wrks emng <P2/d, w/ no hls, Manila	Tailor	1		57.41	32.88	36.00	-21.41	57.27				
87	1932	"	Mechanic	1		53.20	29.06	45.00	-8.20	54.62				

† The figure for 1941 has been extrapolated by using the three-year average rate of growth rates during the previous years, i.e. 1937-38, 1938-39 and 1939-40.
‡ The figure for 1902 has been extrapolated by using the three year average rate of growth rates of population during the succeeding years, i.e. 1902-03, 1903-04 and 1904-05.
§ Estimates using the adjustment factor of 0.563 (cf. File 'Exp&r & incn detcm 1957 BP37').

88	1932	-	Cigarmaker	18	35.96	22.61	19.07	-16.90	62.86	
89	1932	-	Varnisher	8	33.77	20.22	28.68	-5.10	59.87	
90	1932	-	Carpenter	5	27.48	17.14	26.24	-1.24	62.37	
91	1932	Mind idari wrks erang <P2d, w/ Mo. Manila	Fitter (shoemaking)	1	77.36	35.70	63.00	-14.36	46.15	
92	1932	-	Mechanical adjuster	1	33.80	19.92	64.00	30.20	58.93	
93	1932	-	Varnisher	1	57.30	27.30	75.20	17.90	47.64	
94	1932	-	Foundry man	1	35.68	16.30	73.20	37.52	45.68	
95	1932	-	Tinsmith	1	43.79	17.00	57.60	13.81	38.82	
96	1932	-	Common laborer	5	55.01	33.45	54.16	-0.85	60.81	
97	1932	-	Tailor	1	43.38	28.80	49.00	5.62	66.39	
98	1932	-	Cigarmaker	10	39.70	24.31	28.90	-10.80	61.23	
99	1932	Mind idari wrks erang <P2d, w/ Mo. Manila	Turner?, machinery	3	89.49	42.18	79.47	-10.02	47.14	
100	1932	-	Fitter-maker, shoemaking	1	87.85	30.60	80.00	-7.85	34.83	
101	1932	-	Varnisher	1	69.94	43.10	55.20	-14.74	61.62	
102	1932	-	Mechanic	10	69.31	38.37	76.46	7.15	55.35	
103	1932	-	Typesetter	12	68.99	36.81	61.90	-7.09	53.36	
104	1932	-	Foundry men	3	63.88	35.61	57.53	-6.34	55.75	
105	1932	-	Varnisher (in charge)	1	50.55	26.10	60.00	9.45	51.63	
106	1932	-	Cutter, tailoring	1	47.52	29.60	60.00	12.48	62.29	
107	1932	-	Minerva operator	4	43.28	24.87	55.50	12.23	57.46	
108	1932	-	Welder? Builder?	1	42.20	12.27	67.20	25.00	29.08	
109	1932	-	Cabinet-maker	1	37.54	21.30	52.80	15.26	56.74	
110	1932	-	Mechanical adjuster	1	32.92	24.20	49.20	16.28	73.51	
111	1932	Mind idari wrks erang >P2d, w/ Mo. Manila	Mechanic	3	88.57	45.86	98.00	9.43	51.78	
112	1932	-	Foundry men	1	74.99	48.72	84.00	9.01	64.97	
113	1932	-	Typesetter	1	58.80	42.94	110.00	51.20	73.03	
114	1932	-	Cabinet-maker	1	53.76	34.08	60.00	6.24	63.39	
115	1932	-	Minerva operator	1	47.26	23.22	67.20	19.94	49.13	
116	1932	-	Bookbinder	1	45.59	26.62	67.20	21.61	58.39	
Total number of observations & weighted averages				146	42.03	23.52	40.87	-1.15	56.45	
117	1932	Albay	Common laborer, single	3	14.08	9.84	14.80	0.72	69.86	
118	1932	-	Common laborer	25	24.17	13.81	24.23	0.05	57.12	
119	1932	-	Carpenter	5	23.68	11.92	26.40	2.72	50.31	
120	1932	Cebu	Stevedor, single	1	14.69	7.80	42.00	27.31	53.10	
121	1932	-	Chauffeur	1	24.00	16.98	35.00	11.00	70.75	
122	1932	-	Stevedor	2	25.93	13.99	42.40	16.47	53.93	
123	1932	Cotabato	Foreman, single	1	16.91	14.50	24.00	7.09	85.75	
124	1932	-	Caller?, single	2	37.62	25.50	40.00	2.39	67.79	
125	1932	-	Mechanic, single	2	45.54	23.95	76.00	30.47	52.60	
126	1932	-	Cheufeur, single	4	35.69	19.25	35.75	0.06	53.94	
127	1932	-	Chief machine tender, single	1	70.10	37.10	60.00	-10.10	52.92	
128	1932	-	Stoker?, single	4	39.76	24.83	35.50	-4.26	62.43	
129	1932	-	Engine man, single	1	88.83	64.05	85.00	-3.83	72.10	
130	1932	-	Machine tender, single	2	64.21	33.20	45.00	-19.21	51.71	
131	1932	-	Comon laborer, single	1	34.18	19.00	28.80	-5.38	55.59	
132	1932	Ilocos Norte	Agricultural laborer, single	1	12.54	8.10	38.00	25.46	64.59	
133	1932	-	Carpenter, single	1	10.97	6.80	28.80	17.83	61.99	
134	1932	-	Common laborer, single	1	9.85	5.75	16.80	6.95	58.38	
135	1932	-	Shoemaker, single	1	11.57	8.40	24.00	12.43	72.60	
136	1932	-	Agricultural laborer	1	34.90	23.40	36.00	1.10	67.05	
137	1932	-	Carpenter	1	36.19	25.30	21.80	-14.39	69.91	
138	1932	-	Chauffeur	1	19.98	10.50	50.00	30.02	52.55	
139	1932	-	Common laborer	2	20.80	18.15	56.00	35.21	87.28	
140	1932	-	Mechanic	1	36.30	24.50	68.00	31.70	67.49	
141	1932	-	Saddler	1	36.31	15.70	48.00	21.69	59.67	
142	1932	-	Shoemaker	1	19.61	15.00	24.00	4.39	76.49	
143	1932	-	Carpenter, single	1	24.55	9.26	36.00	11.45	37.72	
144	1932	-	Slippermaker, single	1	19.21	10.50	24.00	4.79	54.66	
145	1932	-	Common laborer, single	1	16.85	7.20	24.00	7.15	42.73	
146	1932	-	Master baker	1	57.93	21.70	60.00	2.07	37.46	
147	1932	-	Baker	1	39.32	20.90	45.00	5.68	53.15	
148	1932	-	Ovenman	1	32.27	14.60	41.00	8.73	45.24	
149	1932	-	Tinsmith	2	43.75	24.90	40.00	-3.75	56.91	
150	1932	-	Carpenter	3	44.23	20.17	45.33	1.11	45.60	
151	1932	-	Slippermaker	1	33.32	18.60	32.00	-1.32	55.82	
152	1932	-	Common laborer	5	19.85	7.15	19.20	-0.65	36.03	
153	1932	La Union	Chauffeur	1	40.63	19.50	50.00	9.37	47.99	
154	1932	-	Conductor, transportation	2	42.55	25.45	47.50	4.96	59.82	
155	1932	-	Swichman	1	62.13	37.00	87.50	25.37	59.55	
156	1932	Mindoro	Chauffeur, single	1	22.98	6.98	35.00	12.02	30.37	
157	1932	-	Chairman	2	23.80	10.30	30.00	6.21	43.29	
158	1932	-	Foreman	2	43.53	14.48	67.10	23.57	33.26	
159	1932	-	Carpenter	1	16.83	7.80	46.40	29.57	46.35	
160	1932	-	Chauffeur-mechanic	1	37.55	16.50	50.00	12.45	43.94	
161	1932	-	Engine man	1	33.09	15.40	39.20	6.11	46.54	
162	1932	-	Laborer	4	16.07	6.61	23.75	7.69	41.16	
163	1932	Negros Occidental	Polisher, furniture, single	1	9.48	3.90	13.00	3.52	41.14	
164	1932	-	Cabinetmaker, single	1	16.38	6.50	36.40	20.02	39.68	
165	1932	-	Agricultural laborer, single	5	9.82	5.56	19.76	9.94	56.60	
166	1932	-	Common laborer, single	12	16.98	6.91	25.95	8.97	40.68	
167	1932	-	Agricultural laborer	2	14.58	10.75	29.80	15.22	73.73	
168	1932	-	Common laborer	4	18.93	11.23	27.85	8.92	59.29	
169	1932	-	Watchman	1	25.66	16.30	50.80	25.14	63.52	
170	1932	-	Foreman	3	26.78	15.07	38.50	11.72	56.27	
171	1932	-	Polisher, furniture	1	42.71	13.20	54.90	12.19	30.91	
172	1932	-	Cabinetmaker	5	31.30	17.34	42.80	11.50	55.41	
173	1932	Negros Oriental	Baker	2	19.43	12.50	18.50	-0.93	64.35	
174	1932	-	Blacksmith	1	21.54	13.40	48.00	26.46	62.21	
175	1932	-	Carpenter	2	38.37	18.79	36.00	-2.37	48.96	
176	1932	-	Chauffeur	1	50.84	25.60	38.40	-12.44	50.35	
177	1932	-	Common laborer	5	11.47	6.76	10.08	-1.39	58.91	
178	1932	-	Engine man	2	34.22	14.35	40.00	5.79	41.94	
179	1932	-	Night watchman	1	34.31	23.10	30.00	-4.31	67.33	
180	1932	-	Salesman	2	30.40	19.75	24.50	-5.90	64.97	
181	1932	Pampanga	Slipper maker	7	26.67	17.74	26.71	0.04	66.49	
182	1932	-	Shoe and slipper maker	3	27.70	18.60	28.00	0.30	67.16	
Total number of observations & weighted averages				161	26.89	14.77	32.45	5.56	54.97	
183	1934	Mind idari wrks erang <P2d, w/ Mo. Manila	Carpenters	12	26.34	14.33	26.36	0.02	54.40	
184	1934	-	Tailors	9	28.08	15.86	22.12	-5.96	56.28	
185	1934	-	Varnishers	23	29.75	16.97	26.50	-3.25	57.04	
186	1934	-	Shoemakers	30	26.58	14.08	24.57	-2.01	52.97	
187	1934	-	Cigarmakers	52	22.74	13.14	19.12	-3.62	59.35	
188	1934	-	Slippermakers	32	24.33	13.69	20.29	-4.04	56.27	
189	1934	Mind idari wrks erang <P2d, w/ Mo. Manila	Cigarmakers	77	31.17	19.04	31.80	0.63	61.08	
190	1934	-	Shoemakers	9	37.71	18.41	43.05	5.34	48.82	
191	1934	-	Slippermakers	10	37.25	19.14	37.55	0.30	51.38	
192	1934	-	Tailors	5	32.76	21.98	28.64	-4.12	67.09	
193	1934	-	Varnishers	2	32.98	18.19	47.60	14.62	55.15	
194	1934	Mind idari wrks erang <P2d, w/ Mo. Manila	Carpenters	9	49.10	26.78	54.69	5.59	54.54	
195	1934	-	Shoemakers	9	51.11	26.36	54.81	3.70	51.58	
196	1934	-	Varnishers	2	43.00	24.46	49.20	6.20	56.88	
Total number of observations & weighted averages				281	29.68	16.89	28.61	-1.07	57.36	
197	1936	San Pedro Tunasan	Share tenants in haciendas	26	6.50	19.82	14.60	-5.45	73.66	
198	1936	Lian Estate	-	155	5.56	18.53	11.85	20.09	63.95	
199	1936	Buena-vista	-	740	5.60	20.08	11.97	16.00	-4.08	59.61
200	1936	Dinalupihan	-	184	5.70	25.90	16.52	20.06	-5.84	63.78
201	1936	San Pedro Tunasan	Farm laborers in haciendas	13	5.00	18.02	11.97	11.44	-6.58	66.43
202	1936	Lian Estate	-	29	5.00	19.32	10.90	12.08	-7.24	56.42
203	1936	Buena-vista	-	135	6.00	18.00	10.44	21.20	3.20	58.00
204	1936	Dinalupihan	-	136	4.20	17.45	10.72	17.13	-0.32	61.43

Total number of observations & weighted averages			1,418	5.51	20.18	12.31	17.43	-2.75	60.90
205	1938	Idrl wrks, Manila, unskilled	Under P10/m	2	13.24	6.60	8.58	-4.66	49.85
206	1938	-	P10 & under P15/m	12	18.22	10.13	13.26	-4.96	55.60
207	1938	-	P15 & under P20/m	39	22.63	12.42	17.54	-5.09	54.88
208	1938	-	P20 & under P25/m	56	25.44	14.04	21.84	-3.60	55.19
209	1938	-	P25 & under P30/m	114	27.18	16.60	26.89	-0.29	61.07
210	1938	Idrl wrks, Manila, semiskilled	P30 & under P35/m	176	32.98	20.80	31.87	-1.11	63.07
211	1938	-	P35 & under P40/m	136	39.17	21.75	38.22	-0.95	55.53
212	1938	-	P40 & under P45/m	132	41.50	23.06	43.19	1.69	55.57
213	1938	-	P45 & under P50/m	92	45.42	25.26	49.69	4.27	55.61
Total number of observations & weighted averages				759	34.83	20.14	34.56	-0.28	58.05
214	1938	Sgr fctry wrks in Luzon & Mindoro	Sugar factory workers	14	25.50	21.40	36.00	10.50	83.92
215	1938	-	-	13	26.60	16.50	28.90	2.30	62.03
216	1938	-	-	7	29.70	16.10	36.20	6.50	54.21
217	1938	-	-	26	44.80	33.40	43.10	-1.70	74.55
218	1938	-	-	8	31.10	25.40	40.80	9.70	81.67
219	1938	-	-	13	42.40	24.00	40.50	-1.90	56.60
220	1938	-	-	12	48.20	32.40	54.00	5.80	67.22
221	1938	-	-	38	23.80	16.70	15.50	-8.30	70.17
222	1938	-	-	3	98.20	65.70	110.10	11.90	66.90
223	1938	-	-	4	27.50	20.30	51.80	24.30	73.82
224	1938	-	-	2	68.50	42.50	72.80	4.30	62.04
225	1938	-	-	15	48.30	28.00	28.20	-20.10	57.97
226	1938	-	-	6	23.60	16.20	18.30	-5.30	68.64
227	1938	-	-	21	15.60	11.80	22.00	6.40	75.64
228	1938	-	-	15	22.70	13.10	22.00	-0.70	57.71
229	1938	-	-	13	25.00	20.10	30.20	5.20	80.40
Total number of observations & weighted averages				210	32.19	22.00	32.11	-0.07	69.34
230	1938	Mn sgr fctry wrks, Suburban Manila	Blacksmith	1	40.70	30.00	50.00	9.30	73.71
231	1938	-	Assistant boiler man	1	42.10	30.00	60.00	17.90	71.26
232	1938	-	Factory superintendent	1	28.00	18.20	43.10	15.10	65.00
233	1938	-	Research assistant	1	25.00	12.00	21.90	-3.10	48.00
234	1938	-	Sugar cokker	1	38.00	15.00	60.00	22.00	39.47
235	1938	-	Centrifugal operator	1	39.70	13.00	30.60	-9.10	32.75
236	1938	-	Sample inspector	1	23.70	15.20	20.10	-3.60	64.14
237	1938	-	Floor sweeper	1	21.00	13.00	19.40	-1.60	61.90
238	1938	-	Sugar cleaner	1	24.20	21.20	26.50	2.30	87.60
239	1938	-	Tinsmith	1	57.00	45.50	75.00	18.00	79.82
240	1938	-	Misc. laborers	21	28.00	18.80	36.40	8.40	67.14
Total number of observations & weighted averages				31	29.92	19.61	37.77	7.86	65.60
241	1938	Sgr plntn lbrs in Luzon & Mindoro	Sugar plantation laborers	8	13.80	11.40	11.20	-2.60	82.61
242	1938	-	-	11	17.40	11.10	10.40	-7.00	63.79
243	1938	-	-	6	18.20	11.80	18.10	-0.10	64.84
244	1938	-	-	30	17.70	13.40	17.00	-0.70	75.71
245	1938	-	-	36	19.40	14.90	17.30	-2.10	76.80
246	1938	-	-	47	11.60	9.00	13.30	1.70	77.59
247	1938	-	-	5	6.60	5.60	6.00	-0.60	84.85
248	1938	Wmn's svy on sgr plntn in Luzon & Mindoro	-	173	15.41	12.62	15.83	0.42	81.94
Total number of observations & weighted averages				316	15.45	12.21	15.31	-0.14	79.22

Total number of surveyees reported in this table: 4,272

- Notes) * For data source see Table 1 in the text.
 ‡ Number of female respondents in the parentheses.
 † Weighted average of EGC does not agree in principle with the ratio of (weighted averages of) meal to total expenditures. The latter value however has been widely referred to in the text of the paper.
 †! Respondents (mostly of single status) whose expenditures on meals (and often on house rents also) had been borne by their employers were excluded from the tabulation.
 † "With help" means that family member(s) contributed to the total earning. Conversely in the case of "with no help."

○ Cost of living of a wage earner's family in Mamila (average number in a family = 4.9)*

Year	X1 (pesos)	F (pesos)	EGC (%)
1935	35.72	20.56	57.56
1936	34.27	19.55	57.05
1937	34.62	19.52	56.38
1938	35.65	20.14	56.49
1939	36.28	20.81	57.36
1940	37.99	21.94	57.75
1941	39.06	22.36	57.25
1945	285.21	194.51	68.20
1946	205.02	143.93	70.20

* Source) Bureau of the Census and Statistics, Yearbook of Philippine Statistics 1946, Manila 1947, p.251. (Figures for 1946 are 12 months averages for Jan.-Dec.)

The values of the 1938 Manila survey data are fairly close to those reported by *Yrbk of PS 1946*, with the exception of housing rent. siv2023