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Industrial structure, demographic pattern, and Indonesian current account

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A B S T R A C T

The new trade theory shows the interaction between capital intensity reflects the comparative advantages of a country as well as the industrial structure, and international capital flows. One main proposition stated if a country has high capital intensity in their industrial structure, and changes tends to be capital intensive, foreign capital will flow into the country because the domestic saving position become lower than investment needs. It can explain why international capital flows from developing countries to the developed countries that are relatively rich in capital. This study attempted to examine the consistency and reliability of the theory in the context of Indonesia. The important thing here is the existence of different viewpoints in assessing the phenomenon of the current account balance. The model used is the restricted error correction mechanism in Autoregressive Distributed Lag (ECM-ARDL) approach. The result indicates that both industrial structure and demographic pattern are affecting Indonesian current account significantly. Specifically, capital intensity negatively affects Indonesian current account. This indicates the higher capital intensity, which means the greater tendency to capital-intensive industry structure, leads to higher current account deficit. The analysis also highlights the importance of demographic pattern in determines Indonesian current account through their impact to savings – investment position.

A B S T R A K

Teori perdagangan baru menunjukkan interaksi antara intensitas modal yang mencerminkan keunggulan komparatif suatu negara serta struktur industri, dan arus modal internasional. Salah satu proposisi utama, jika suatu negara memiliki intensitas modal tinggi dalam struktur industri mereka, dan perubahan cenderung padat modal, modal asing akan mengalir ke dalam negeri karena posisi tabungan domestik menjadi lebih rendah dari kebutuhan investasi. Ini menjelaskan mengapa arus modal internasional dari negara ke negara-negara maju yang relatif kaya di ibukota berkembang. Penelitian ini menguji konsistensi dan keandalan teori dalam konteks Indonesia. Hal penting, adanya sudut pandang berbeda dalam menilai fenomena neraca transaksi berjalan. Model yang digunakan adalah mekanisme koreksi kesalahan yang dibatasi dalam pendekatan Autoregressive Distributed Lag (ECM-ARDL). Hasilnya menunjukkan bahwa kedua struktur industri dan pola demografis mempengaruhi transaksi berjalan Indonesia secara signifikan. Secara khusus, intensitas modal berpengaruh negative terhadap transaksi berjalan Indonesia. Ini berarti intensitas modal lebih tinggi, yang berarti kecenderungan lebih besar untuk struktur industri padat modal, menyebabkan defisit transaksi berjalan lebih tinggi. Analisis juga menyoroti pentingnya pola demografis dalam menentukan current account Indonesia melalui dampak savings – investment position.

1. INTRODUCTION

There are two important phenomena in the global economy such as the trade or finance integration and the increasing labor force or productivity in developing countries. Open economy models predict capital flows into developing countries, but it turns out that it is not consistent with the facts (Jin 2012). The condition happens whether the power of

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these two phenomena have changed the comparative advantages of a country, which in turn, alter the structure of trade and lead to the capital allocation globally. Both of these phenomena can alter the comparative advantages of a country, which in turn, change the structure of trade and lead to the allocation of capital globally. Over several years, global capital and current account imbalances have played a major role in a number of important macro debates. The unusual flow of capital from the emerging to the developed world has all been key forces that may have played a role in the recent global recession.

There is an interesting study examining the interaction between trade and capital flows by allowing the movement of goods and capital made by Jin (2012). The analysis was developed a general equilibrium framework that integrates paradigm proportion or intensity factor in traded products with capital flow that allows them to interact each other. This found contradictory propositions with standard macroeconomic predictions. Permanent increase in the labor force or labor productivity in a country will encourage the capital outflows. Moreover, capital flows from developing countries to developed countries when both countries were integrated. Jin (2012) explicitly states that the capital flow will go to countries that have industrial structures tend towards to capital intensive and encourages the current account deficit enlargement.

Theoretically, the current account not only exports minus imports but also net capital gains on foreign assets (Obstfeld & Rogoff 1995). The current account also shows the position of national saving minus domestic investment. If savings is lower than expected investment, foreigners can balance the two. Intertemporal approach to the current account analysis widened through private saving and investment as well as the government's decision as a result of forward calculation based on expectations of future productivity growth, demand for government spending, and the real interest rate.

The movement of investment and savings can not be separated from the demographic phenomenon of a country. The increase in the dependent population, in particular the elderly population, is expected to negatively influence public saving as it increases pressures on pension, healthcare, and other areas of public spending. A smaller work force can result in lower tax revenues. National saving will decline as both private and public saving shrink. On the other hand, in an open economy adjustments to demographic changes also occur through external-sector transactions. Demographic change is expected to negatively influence investment demand as slower labor force growth and lower expected output growth reduce the rates of return on investment. If an increase in the dependency rate causes national saving to fall greater than domestic investment, it will lead to a worsening of the current account or capital inflows (Kim & Lee 2008).

Because of Indonesia has a labor force relatively larger than capital, it can be assumed that the Indonesia industrial structure tends to labor intensive. Therefore, if it is associated with the demographic structure, the relatively large amount of labor force encourages savings formation that relatively larger than the needs of domestic investment, which in turn, encourages capital outflows and reflected in the surplus current account trend.

This study estimates the effect of capital intensity and demographic structure on the Indonesian current account. The method used is autoregressive distributed lags (ARDL) which is considered to provide consistent estimation on the data with different degrees of integration. The analysis shows that the capital intensity and demographic structure can indeed affect significantly the movement of Indonesian current account. It can be assumed that it can describe the industrial structure showed a negative effect. It indicates that if the industrial structure leads to more capital intensive, the current account deficit will increase. Similarly, the relationship direction is also shown by the ratio of dependency rate effect. However, ratio of elderly cohort had no significant effect. The paper is organized as follows. Part II will give a brief of literature review and empirical standpoints of the theory have been conducted. Chapter III provides an overview of data and methodologies used, followed by a discussion of the results in Chapter IV. Chapter V gives a brief summary of this paper.

2. THEORETICAL FRAMEWORK AND HYPOTHESES

Balance of Payments and Country's International Capital Position

Conceptually, balance of payments and data associated with international investment position is closely connected to the recording system of national transaction balance framework. This is more comprehensive and systematic in collecting and presenting economic statistics of an economy (International Monetary Fund 1993).

$$GDP = C + I + G + X - M. \quad (1)$$

Where:

C = private consumption expenditure

G = government consumption expenditure
I = gross domestic investment
S = gross saving
X = exports of goods and services
M = imports of goods and services.

Gross national disposable income (GNDY) definition is GDP added by net income from abroad and becomes:

$$GNDY = C + I + G + X - M + BPI + BSI. \quad (2)$$

Where:
BPI = balance on primary income
BSI = balance on secondary income (net current transfers).

Current account becomes:

$$CAB = X - M + BPI + BSI. \quad (3)$$

CAB = current account balance.

Current account balance can be seen comparable to the difference between disposable income (equation 2) and expenditure (equation 3):

$$CAB = GNDY - C - G - I \quad (4)$$

or

$$GNDY = C + G + I + CAB. \quad (5)$$

Definitions used in the System of National Accounts (SNA) on income account:

$$S = GNDY - C - G. \quad (6)$$

Substituting (5) in equation (6):

$$S = I + CAB \quad (7)$$

or:

$$CAB = S - I. \quad (8)$$

It seems that current account balance is the difference between saving and investment. For that reason, the current account balance reflects the behavior of saving and investment in the economy. For example, an increase in investment relative to savings would be the same effect on the current account as well as a decrease in savings relative to investment, at least in the short term. However, in the long term implications for the external economy could be slightly different. Generally speaking, identity above indicates any changes in the current account of an economy (e.g., the enlargement of the surplus or deficit shrinks) essentially proportional to the increase in savings relative to investment. This relationship demonstrates the importance of the policies implementation that can be designed to alter the current account directly (for example, changes in tariffs, quotas, and exchange rates) that will affect the behavior of savings and investment.

The relationship between domestic transaction and international identity shows in equation (4). The implication of this relationship to the analysis of the balance of payments as follow: an increase in the current account of a country requires a reduction in spending relative to income. Alternatively, it is possible to improve the position of the current account balance by increasing the national income is also means a decrease in domestic consumption or investment. Implementation of structural measurements of increased economic efficiency could be one way to achieve those goals.

The other important point is shown from above identity that is more indicative the relationship definition between variables than explain the economic agents behavior. The above identity individually can not provide a complete analysis of the factors that determine the current account movement. For example, total expenditure on goods and services by domestic residents (C + G + I) seem affected by the part of their income (GNDY). Therefore, the analysis of GNDY change effect to the current account balance is not sufficient only use the identity of equation (4) without considering the inclusion of consumption and capital formation response in these changes. The illustration shows importance of understanding the expenditure part of the population in the economy when analyzing the balance of payments.

Industrial Structure and Current Account

Changes in industrial structure and the pattern of specialization may also affect capital flow. The model used overlapping generation model (OLG) construction developed by Jin (2012) which explicitly suggest the proposition on complementary relationship between the liberalization of trade and capital flows, by connecting it to the industrial structure of each country. This model modifies the Heckscher-Ohlin-Mundell (O-H-M) model with the OLG characteristics in each country, in which each person living in two periods where they work in the first period and retire when older.

Each country is assumed to have the same technology to produce intermediate goods, traded freely and without charge. Intermediate goods are combined to produce a group of items used for consumption and investment. Preferences and production technology are assumed to have same structure and parameter values across countries. However, the technology used is different in two aspects: 1) in each country only use domestic labor, and 2) suppliers of intermediate goods depends on country - specific productivity and labor changes.

The solutions for equilibrium in each country formed based on three assumptions: 1) the substitution elasticity of intermediate goods is unitary (θ = 1), 2) consumers have a preference in logarithmic form (ρ = 1), and 3) capital adjustment technology in log-linear form. When θ = 1, the relative change

of final outcome will be perfectly replaced by relative price changes thus the nominal value of the final outcome remains constant across sectors.

The second assumption oversimplifies consumption or savings problems and causing private saving that does not depend on real interest rate yields value. However, the third assumption describes the shape of capital specification used in producing an item i, in the country, *j*, in period t is influenced by investment goods and capital stock that period. The combination for all of those assumptions imply that entity of the ratio of total global investment-output and ratio of global investment industry level – output hold constant.

Based on the above assumptions, the evolution of the capital stock in each sector, i, in each country, *j*, is determined only by the key variables that is the present discounted value of the expected share of goods *i* which produced domestically. Global investment portion allocated to industries *i* then determined based on the value of the weight proportion of the capital. The greater the weight proportion of capital in industry *i* relative to weight proportion of average capital, the greater portion of global investment coming into this industry is. The investment portions of a country on the industry *i* then becomes the key variables that determine the evolution of the capital stock and the aggregate investment of a country. This means that the larger country *j* produces product *i* will lead to growing investments in product *i* is allocated to country *j*. Investment in country *j* is not only associated to the size of the expected production but also the production composition in which the greatest weight is given to the portion of future production of capital-intensive goods (composition effect). An increase in technology or labor force permanently in foreign country that effectively increases the portion of foreign production globally will reduce portion of domestic investment (convergent effect).

The demand of capital in a country relative to existing savings depends on the industrial structure. An industrial structure leaning towards capital intensive sectors will face greater investment demand thus increases output portion to invest. At the same time output portion to wage decreases. The opposite condition happen in countries that concentrate on the production of labor intensive industry. Therefore, in a fully integrated world economy, a country that encounter an increase in labor force or productivity that change its industrial structure tend to labor intensive product are likely to experience capital outflows (Jin 2012).

Demographic and Current Account

It is on the basis of current account identity above that demography is hypothesized to affect the current account balance. According to Modigliani's life cycle hypothesis, households at working age are the prime net savers of societies, while young households are likely to be borrowers and old-age ones are likely to be dissevers. Therefore, countries with a relative young or old population are more likely to consume more than what they produce. This results in a current account deficit. Yet, the majority of the literature adopts this hypothesis and thus expects youth and old-age dependency to have negative impacts on the current account balance, this is not the full story (Graff et al. 2012).

The increase of dependency rates is also expected to negatively affect the demand for domestic investment. In addition, slower labor force growth and lower expected output growth will decrease the rates of return on investment. Unless a (labor-augmenting) technological progress accelerates, domestic investment demand must decline. However, in the short run, investment increases may result from the need to substitute capital for a falling supply of labor input (Kim & Lee 2008). The effect of the dependency variable on the current account is equal to the net of their effects on saving and domestic investment. Hence, the effect of the increased dependency on the current account balance is determined by the relative force of changes in national saving and domestic investment. For that reason, the increase in the dependency rates, if it lowers national saving rates faster than domestic investment, would adversely affect the current account.

Several empirical studies have investigated the effect of population age on saving, investment, and current account. For example, Narciso (2010) studied the relationship between demographical factors and international capital flows. It focused on especially the impact of age on foreign direct investments (FDI) and foreign portfolio investments (FPI) on a bilateral level. The bilateral FDI and FPI are modelled by using fixed effect of balanced panel data. The results suggest that the current and future age structure of the nation have a significant effect on current international capital flow. The similar result by Kim & Lee (2008) shows that the macroeconomic effect of demographic changes on saving rates and current account balance using panel VAR model. They found that there was a substantial demographic effect on national saving rates and current account balances in the major advanced (G-7) countries. An increase in the de-

pendency rate significantly can lower the saving rates, especially public saving rates. Furthermore, a higher dependency rate significantly also lowers current account balances.

A study by Higgins (1998) addresses the relationship between age distributions, national savings and the current account balance. The results point to substantial demographic effects, with increases in both the youth and old-age dependency ratios associated with lower savings rates. They also point to differential effects on savings and investment, and thus to a role for demography in determining the current account balance. The estimated demographic affects the current account balance exceeding to six percent of GDP over the last three decades for a number of countries. As it is given expected demographic trends, it can be substantially larger over the following decades. On the contrary, there was an evidence shown by Graff et al. (2012) which indicates that population age, measured by old-age dependency does not have clear effect on the current account balance. However, it suggests that these different findings in the previous literature could be to the negligence of the general equilibrium, size, and openness factor.

3. RESEARCH METHOD

This study is intended to estimate the relationship between the structure of industry and demographic structure on the current account in Indonesia. The data were obtained from the World Development Index published by the World Bank during the period 1981 - 2014 that is the annual data.

The value of capital intensity ratio, *kt* = *Kt/Lt*, reflects the comparative advantage of a country. The decline in the *kt* is due to high productivity or increase the number of labor force. This, in turn, encourages the country to gave a higher comparative advantage in labor. Production shift occurs and it increases the GDP that is due to increasing the salary or wage income. Countries that concentrated on in labor-intensive product industries could have relatively large of labor income portion to GDP. Hence, the saving ratio to GDP is a negative function of *kt*. Capital intensity value that indicates the amount of capital used by one person labor force. The greater of the capital intensity reveals that these countries are relatively rich in capital and tend to have a capital intensive industry. In addition to capital intensity variable, the demographic structure is also an important variable as a determinant of the current account.

There are two ways to obtain a series of capital stock (Shirotori et al. 2010): 1) direct measurement by survey, and 2) the perpetual inventory method (PIM). This research used PIM method to estimate capital stock in each country with the following formula:

$$K_t = (1-\delta)K_{t-1} + GFK_t \quad (9)$$

Kt is capital stock at period *t, GFKt* is gross fixed capital formation at period *t*, and δ is depreciation rate. Problems that often arise are in the initial capital stock estimation and depreciation rate assumption. In this research, the initial capital stock is estimated by disequilibrium approach. This approach uses the neo-classical growth theory and based on the assumption that economy is often in the adjustment position in its equilibrium path. Since the adjustment process, the investment and capital accumulation tend to follow a systematic pattern. This assumption is considered more plausible than the assumption that the economy is in steady state (Berlemann & Wesselhöft 2012). Initial capital stock can be calculated as the following formula (Hall & Jones 1999):

$$K_0 = \frac{GFK_0}{\delta + g_{GFK}} \quad (10)$$

K_0 is initial capital stock, GFK_0 is initial gross fixed capital formation, g_{GFK} is gross fixed capital formation growth, and δ is depreciation rate. The gross fixed capital formation growth rate is calculated from the average growth rate of gross fixed capital in the first ten years. Depreciation rate is generally assumed to be constant and equal across countries. However, it is deemed inappropriate due to the fact that the richer countries will have a higher capital depreciation rate. The analysis in this study uses depreciation rate from Penn World Table (PWT) 8.0 which varies across countries and time periods (Inklaar & Timmer 2013).

Unit root tests showed whether all of the variables used do not have same degree of integration. If the variables used have different degrees of integration, *I(0)* and *I(1)*, then the regression at level only result in a spurious regression results. Spurious regression is when the estimation result indicates a significant relationship between variables in the model whereas in fact correlation occurs is more random than being significant correlation (Harris 1995).

Autoregressive distributed lag (ARDL) model is a dynamic equation most commonly used in variable with different degrees of integration combinations. This model includes lag of dependent variable and lag of independent variables as regressors. Pesaran & Shin (1999) suggested that ARDL model has advantages in providing constant coefficient

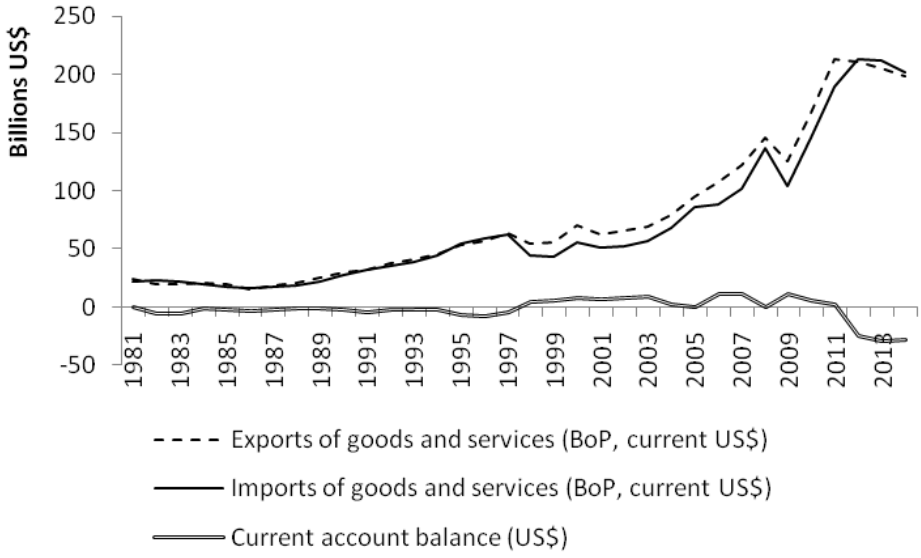

Figure 1
Current Account as Export – Import Reflection

Source: World Bank (2014).

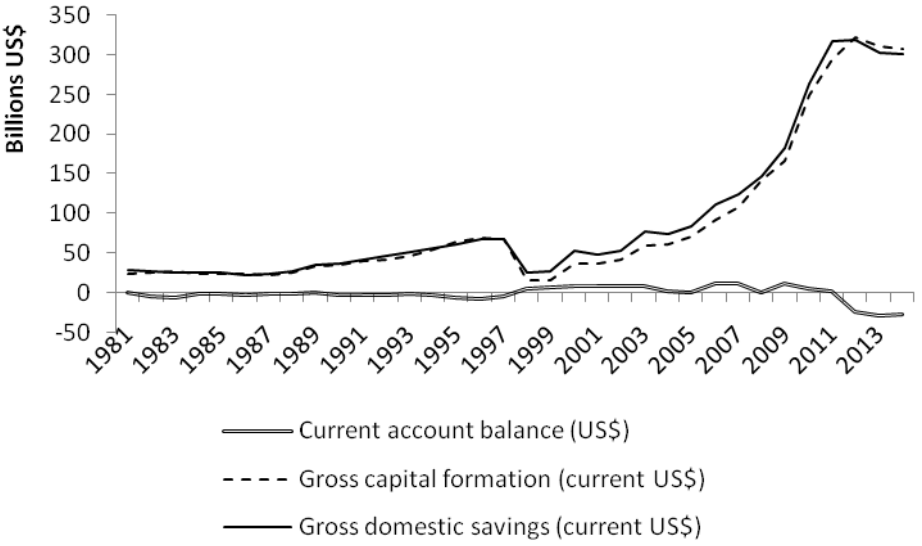

Figure 2
Current Account as Saving – Investment Reflection

Source: WDI, World Bank (2014).

estimation regardless of the regression variables integrated in *I(1)* or *I(0)*. If the model ARDL assumed stable, it is certain that the value of the dependent variable lag entered as regressors in the range 0 <λ <1, which will form long-term relationships between *Yt* and *Xt*. Model ARDL (*p, q, q, ..., q*) is generally expressed as follows:

$$y_t = \alpha_0 + \sum_{i=1}^{p} \emptyset_i y_{t-i} + \sum_{l=0}^{q} \delta_l^{'} X_{t-i} + \varepsilon_t. \quad (11)$$

Alt and Tinbergen used sequential process for determining the optimum lag length (Gujarati & Porter 2009). The first step is to regression Y_{it} to the X_{it}. The next step is regressing Y_t with X_t and X_{t-1}, then regressing with X_{t-2}, and so on. This sequential procedure stop when the regression coefficient of lag variable becomes insignificant, or at least one coefficient of this variable changes sign from positive to negative or vice versa.

Pesaran, et al. (2001) describe the methodology to test their long-term relationship between the independent variables and the dependent variable in the ARDL model (bound test) as part of post-estimation diagnostics. The model used in this test using ARDL transformation of the initial model is as the following.

$$\Delta y_t = \alpha_0 + \pi_y y_{t-1} + \pi_x^{'} X_{t-1}^{k} + \sum_{i=1}^{p-1} \psi_i^{'} \Delta y_{t-i} + \omega^k \Delta X_{t-i}^{k} + \upsilon_t. \quad (12)$$

Table 1
Unit Root Test Results

Parameter	ADF test statistic	Description
Current account ratio to GDP	-5. 816760***	Stationer in first difference
Capital intensity growth	-5. 396051***	Stationer in level
Age dependency ratio, old	-5.782524***	Stationer in first difference
Age dependency ratio, young	-2.591066*	Stationer in level
Government expenditure growth	-4.175427***	Stationer in level
GDP growth	-4.059387***	Stationer in level
Ratio M2 to GDP	-2.937473**	Stationer in first difference
Tariff	-4.169363***	Stationer in first difference

Sign *** means significant at α = 1%, ** significant at α = 5%, and * significant at α = 10% .

Hypotheses tested:
πy = 0
πx1 = πx2 =… πxk= 0

Testing is done by using the Wald test. Statistically significant value indicates if there is a long-term relationship between independent variables and dependent variable. The dependent variable here is the ratio of the current account balance to GDP, while *Xk* is a set of explanatory variables. Variable interest in this paper is capital intensity that reflects industrial structure trend.

Demographic structure included here is the cohort of elderly (ratio of population > 64 years of total working age population) and cohort ratio of young population (population ratio <15 years of total working age population). These variables are meant to test the hypothesis whether the demographic structure affects on the current account, through investment - savings. It is also important to include some variables that are assumed to be the main current account balance determinants which correlated with investment - savings, or the demographic structure as control variables to avoid omitted variable bias. Some of the control variables used here is the ratio of M2 (of GDP), which reflects monetary policy and financial institution development. Other control variables are fiscal policy (proxy by the growth of government spending), and tariff as an indicator of economic openness.

4. DATA ANALYSIS AND DISCUSSION

Picture of Indonesian Current Account

A Study by Moreno (2008) in five Southeast Asian countries showed current account deficit persistently along of 1990s although their trade balance surplus. Reversal condition of current account from deficit to surplus is said that it does not reflect the strong export boost because happened otherwise. The exports value in 1998 was contracted in all samples. Therefore, another aspect of the current account balance becomes important to analyze. The current account movement does not solely reflect export and import, including that in Indonesia as illustrated in Figure 1 and Figure 2.

Figure 1 illustrates the movement of the current account balance and transaction import-export as well. In the period from 1980 to mid-1997, there was a deficit trend in the Indonesian current account despite the relative value of exports was higher than imports. These figures are a bit contradictory with the general understanding that the current account always surplus if the trade balance surplus. Although later, after a period of late 1997, there was a reversal of the conditions in the current account into surplus, which were consistent with trade balance picture. Compare to Figure 2.

In Figure 2, the value of domestic investment appears to be relatively larger than the savings during the period 1980 to 1997. This indicates the need for investment in the country is higher than the domestic savings that can be used. Therefore, it encourages alternative external financing to attract international capital inflows, as reflected in the current account deficit. After that period, the opposite position happened. The value of domestic investment looks smaller than the savings and current account became surplus. These figures show if the difference between domestic investments - savings more consistently shed light on the current account movement compared to simply export - import.

Empirical Analysis

The initial analysis of time series data is to insure if the data used are stationary to avoid spurious regression. Unit root test here used Augmented Dickey-Fuller (ADF). The test results are shown in Table 1.

Since all the variables are integrated to different degrees, I0) and I (1), the ARDL is an appropriate method. Issues to be aware of the time series data is autocorrelation or correlation between the error terms especially with the inclusion of lag variables in the model. Generalized method of least squares (GLS) is a proper technique to overcome

Table 2
Estimation Result of Variable Parameter Coefficients

Parameter	Coefficient	t statistic
Capital intensity growth	-0.073164**	-2.701915
	(0.027078)	
Age dependency ratio, old	-10.20670	-1.483225
	(6.881422)	
Age dependency ratio, young	-7.086916***	-2.989441
	(2.370649)	
Ratio M2 to GDP	-0.461727***	-3.702645
	(0.124702)	
GDP growth	-0.467909***	-8.775072
	(0.053323)	
Government expenditure growth	0.116042***	3.222835
	(0.036006)	
Tariff	-0.006955	-0.025178
	(0.276251)	
Current account (-1)	0.620233***	7.453613
	(0.083212)	
Wald test statistic: πy = 0	0.379767***	
	(0.083212)	
Wald test statistic: πx1 = πx2 = πx3 = πx4 = πx5 = πx6 = πx7= 0	5.867222***	
R2	0.914096	
F statistic	11.35028***	

Sign *** means significant at α = 1%, ** significant at α = 5%, and * significant at α = 10% .

the problem of autocorrelation with the transformation of variables directly in the estimation procedure. This cannot be done by OLS (Gujarati & Porter 2009). The estimation results are shown in the Table. 2

Wald test statistic value of the dependent variable lag parameter (πy = 0) showed a significant result. It indicates if the short-term models will converge to the long run equilibrium with the speed of adjustment of 0.3797. This means that 37.97% gap of short-term current account with its long-run equilibrium, which is caused by the change of independent variables, will be closed within one period (one year). Value under 0.50 indicates if the adjustment in the Indonesian current account due to a change in the explanatory variables is relatively slow.

Pesaran et al. (2001) describe a methodology for testing whether the ARDL model contains a level (or long-run) relationship between the independent variable and the regressors. The test using Wald test on dependent variables lag parameter is as follows: πx1 = πx2 = πx3 = πx4 = πx5 = πx6 = πx7= 0. This shows significant results, which means the current account in the model ARDL which is a dynamic model that produces short-term coefficients does have a long-term relationship with the explanatory variables included in the model.

Estimation result shows if capital intensity negatively affect current account significantly. This means that the higher capital intensity of a nation, the greater the current account deficit is going through. It is related to industrial structure that affect investment and savings balance position in a country. The higher the capital intensity industrial structure tends to lead to capital intensive. Hence the need for capital will be greater than the existing savings. Therefore, the country needs larger capital inflows from abroad which reflected in the current account deficit.

The demographic structure of the population, both elderly age cohort and younger age cohort, are seen negatively correlated with current account. This means that the higher the ratio of elderly and young people, which in this case is non-productive age population, the higher the current account deficit is. However, only the young people cohort have a significant impact on the current account movement. This negative correlation showed evidence of the life cycle hypothesis, which is young households, are likely to be borrowers and old-age ones are likely to be dissevers. Therefore, countries with a relative young or old population are more likely to consume more than what they produce, resulting in a current account deficit. Life cycle savings is proposed as one to explain much of the increase in savings and economic growth in Asia (Schultz 2005). He found a negative correlation between age composition of a nation's population and its savings rate, observed within 16 Asian countries from 1952 to 1992. Study result by Chinn & Prasad (2003) also found a significant influence on the younger

age cohort for developing countries, while the older age cohort has no effect.

Various control variables used here also could well explain the movement and direction of change in the current account. Economic growth showed a significant negative effect on the current account movement. GDP growth effect to savings depends on GDP growth implications to the permanent income from the household perspective. Negative correlation here indicates if the GDP growth is interpreted as a signal permanent income rising. Based on the life cycle permanent income hypothesis, the increase in GDP will responded by lowering the savings in the current period (Chinn & Prasad 2003). On the other hand, the increase in GDP growth can be regarded as an important element in attracting foreign investment (Gruber & Kamin 2005).

Another determinant variable, i.e. the ratio of M2 to GDP showed a level of depth or financial institution development in a country. The depth of financial institution is an increase in the provision of financial services (Jahan & McDonald 2011). This monetary variable is intended to illustrate the actual size of the financial sector in an economy where money into valuable savings and as a medium of exchange (United Nations 2006). Traditional interpretation of this variable is to measure the level of perfection of the financial system to attract more savings. This variable can also be seen as a proxy for borrowing constraints that must be faced by individual agents that are associated with smaller private investment. The coefficient ratio of M2 to GDP indicates that the financial system development negatively affect current account. This result is in line with other empirical studies if in developing countries describes existence and development of the capital markets that can be accessed. Better and more integrated financial markets will increase the country's ability to borrow from abroad (Chinn & Prasad 2003; Herrmann & Winkler 2008).

Tariff that reflects Indonesian economy openness showed a negative relationship with current account. The degree of openness can be correlated with other attributes that make a country attractive to foreign capital. The more open a country, the higher the foreign exchange earnings is through exports, which could be a signal country's ability to manage foreign debt (Chinn & Prasad 2003). It's just that the effect is not significant to Indonesian case.

Government spending showed a positive effect on current account which means higher government spending will enlarge the current account surplus. A significant result indicates if in Indonesia occurred Ricardian offsets between private and public saving savings although imperfectly. Ricardian offsets mean increased government spending responded with declining private investment, or increase in private savings. Obstfeld & Rogoff (1996) suggest if the government budget deficit tends to increase the current account deficit by redistributing income from the future to the present generation.

5. CONCLUSION, IMPLICATION, SUGGESTION, AND LIMITATIONS

Theoretically, the fast-aging population and the shrinking labor force have a significant effect on national saving and investment. The current account is, by definition, identical to the imbalance between national saving and domestic investment. Therefore, a saving–investment imbalance in an individual country determines its current account balance. It is an important question if the industrial structure and demographic has a significant impact on current account balances in Indonesia. The purpose of this paper is to investigate empirically the implications of industrial structure and demographic in Indonesia, through on saving – investment rates to current account balances.

The estimation result shows the intensity of capital, which reflects the tendency of the industrial structure, correlated negatively on current account. The same thing was also shown by the demographic structure, even though the cohort of elderly gives no significant effect. It means that demographic and industrial structures are important determinants for saving - investment in Indonesia and it is reflected in current account position.

The finding implies corrections in the current account position, which is determined on what factors are in motion. If export and import decrease, it can make the current account deficit. The policy should fix the trade trend, for example, by tariff or non-tariff, and exchange rate. However, when the deficit is due to the position of low domestic savings, then the government can implement policies that are directly related to the savings and domestic investment, for example, by the interest rate and the government budget deficit.

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