Economic structural transformation and equity in Vietnam: Lessons from Post-War Japan

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Abstract

Duality in economic structure is an enduring characteristic of many developing and emerging economies, and even when economies industrialize, structural and regional imbalance remains a challenging problem in economic development. Japan however managed to solve the problem of duality in its economic structure in the post-war period. This research analyses the Japanese economic transformation experience and draws lessons for Vietnam, which even though has made great strides in reducing poverty, still faces the challenge of economic structural duality and regional imbalance characterized by poverty. The main finding is that raising productivity uniformly across sectors and regions was central to Japanese structural economic transformation, and that such productivity rise can be facilitated by uniform infrastructure development and judicious governmental policies directly impacting the right combinations of factors of production, namely increase in capital and technology in all productive sectors. The lessons drawn for Vietnam are judicious governmental policies providing incentives for increasing technology and capital investments even in rural areas. In addition, governmental policies positively impacting agricultural commodity prices, infrastructure development, and land reforms are recommended for Vietnam.

Keywords: Economic Duality, Economic Structural Transformation, Equity, Japanese and Vietnamese Economic Development

Introduction

Duality in economic structure is an enduring characteristic of low-income and emerging economies, and within such economic structure, poverty and income inequality lurks both in rural and urban settings. Duality in itself is defined by a glaring disparity in productivity as a result of factor combinations used. Duality is also defined based on the distinction of "center" and "periphery" (Averitt, 1968:7). However, there is lack of conceptual convergence regarding the unit of analysis of duality, but the common denominator is inequality within national economic structure. Some past researches take firms as the unit of analysis (Averitt, 1968; Stolzenberg, 1978; Baron and Bielby, 1980). On the other hand, (O'Connor, 1973; Hodson, 1978; Kalleberg et. al., 1981) take industrial sector as the unit of analysis. Other past studies were more focused on the consequential division of labor resulting from the inequality, thus the discussion is centered on aspects of duality (Bluestone, 1970; Doeringer and Piore, 1971; Gordon, 1972). On the other hand Amin (1976) looked at duality in economic structure as an exposition of asymmetric socio-economic and political power relations leading to uneven development.

However, owing to the pragmatic concerns of this paper, we look at duality primarily as a divide comprising spatial, economic and social dimensions that negatively impact socio-economic development in a country. As such, the most common forms of duality are a relatively productive manufacturing and service sectors pitted against low-productivity agricultural sector, large companies using advanced technologies versus small and informal enterprises with crude technologies, impoverished rural sector against urban sector with modern facilities, and underdeveloped primary sector versus progressive secondary sector. In terms of simplification, duality can be understood in terms of urban-rural, and formal-informal sector dichotomies defined by inequality. Whatever form of duality, the type of technology, capital labor ratio, level of economic development, annual growth rates and value added, per capita incomes, and the social-economic relations, and policies spawning creation and deployment of knowledge in production are the premises upon which we can understand the problem of such economic structure.

The past economic emergence of Japan, and later that of the newly industrialized countries in East Asia undermined the main arguments and persuasion of schools of thought propounding futility of the center-periphery relationship. The economic success and structural transformation of these economies demonstrated what is possible in economic development. Nonetheless, uneven development is still a reality in the 21st Century, and economic development models and policies must contend with the issue. Duality in the Vietnamese economic structure is expressed in the form of divide between industrial urban zones and the agricultural rural zones representing income inequality and poverty divide between urban and rural areas. While Vietnamese economy has grown at one of the fastest rates in East Asia, the emerging challenge has been one of matching equity with economic growth. Structural transformation erasing duality between urban and industrial zones on the one hand, and rural and agricultural zones on the other hand is critical to achieving economic growth and equity. We can learn from the case of Post-War Japan, which systematically erased inequality between urban and rural sectors in a span of about two decades.

Methodology – Deconstructing Duality and associated Inequality

We analyze the five key determinants of duality; (1) capital labor ratio in agriculture and manufacturing sector, (2) employment levels for the sectors, (3) net capital formation, (4) the technological advances, and (5) price levels of products of each of the sectors. In addition, we make a deductive assessment of public policies on prices and infrastructure related to the two sectors, and change over time in prices of agricultural and manufactured commodities. Our approach is based on the empirical evidence of Japanese transformation from structural duality in the late 1890s - 1930s to a point where structural duality was erased in the two decades of 1950s and 1960s.

We can express duality as follows:

$$D = \frac{Q_1}{Q_2} \qquad (1)$$

D is the duality index, Q_1 being product per worker in say rural agricultural sector, and Q_2 being the product per worker in the urban manufacturing sector. We can go a head to derive the values of Q_1 and Q_2 as follows:

$$Q_1 = \frac{V_1 P_1}{L_1} \; ; \; Q_2 = \frac{V_2 P_2}{L_2} \qquad (2)$$

In this case V_1 and V_2 are the real product per worker in rural agricultural and manufacturing urban sectors, P_1 and P_2 are the prices for products from the two sectors, and L_1 and L_2 indicate labor size in the two sectors. We take the relatively more productive manufacturing sector as having a higher capital-labor ratio, K_2^* compared to the agricultural sector K_1^*.

The values of K_2^* and K_1^* can be expressed as:

$$K_1^* = \frac{K_1}{L1} \; ; \; K_2^* = \frac{K_2}{L2} \qquad (3)$$

V_1 and V_2 are aggregate functions of capital and labor, so can be expressed as:

$$V_1 = f(K_1 , L_1); V_2 = f(K_2 , L_2)$$

Real product per worker can be expressed as:

$$V_1 / L_1 = \phi (K_1^*); V_2 / L_2 = \phi (K_2^*) \qquad (4)$$

In the above relationship, so long as the capital-labor ratio remains high for the manufacturing sector relative to the agricultural sector, the productivity and incomes will remain far higher than those for the agricultural sector. Invariably, if no technological progress accompanied by significant rise in factor prices obtains, duality condition will continue to prevail. So how can we tackle the problem of duality in economic structure based on the explanations? We must look at the causes of duality and its dynamics, which from the above cause-effect expressions, we can summarize as a five-action points to obtain relative changes between the two sectors defining duality in economic structure as given in figure 1.

We also take note that conventional labor and capital components of the productivity equation fail to adequately account for productivity growth owing to diminishing returns to quantity inputs of K and L in an economy, *ceteris paribus* (all things held constant). We therefore suggest adding technical progress to the equation as could be represented by R&D effort and improvement in human capital. This is an acknowledgement of unexplained residual or technical change as expounded in Solow's exogenous theory (1956; 2000). Technical change happens over time (t), thus is a time trend for all the inputs in the productivity equation. It is technical change over time that allows K and L to be more productive with technical change being an endogenous factor. Therefore we can

express this relationship as below:

$$Y_{(t)} = F(A_{(t)}(K_t, L_t)) \qquad (5)$$

Dynamics and Intervention Points for Solving Duality in Economic Structure

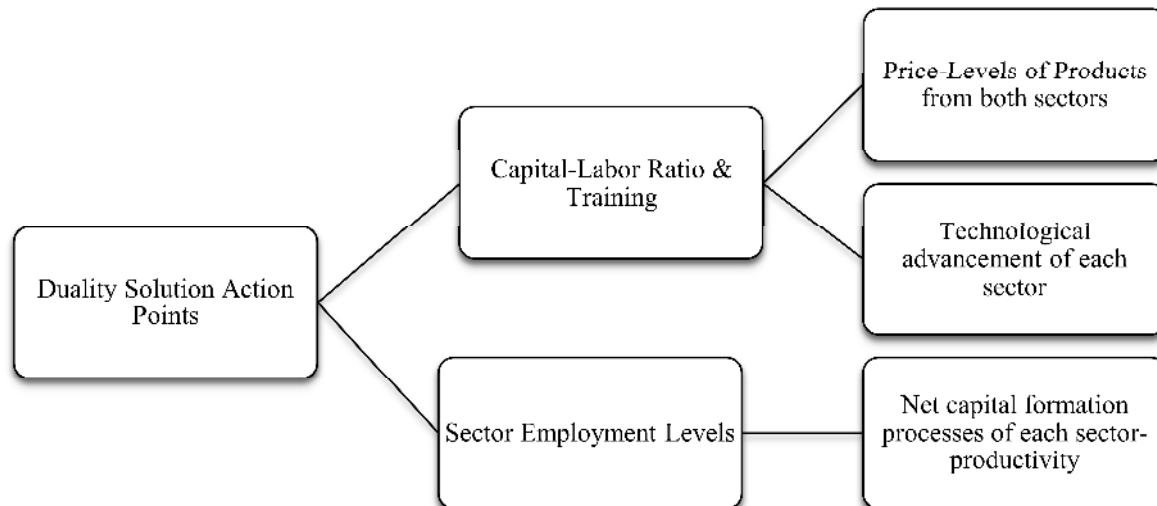We can derive intervention points based on the dynamics of productivity equation and the exposition of duality.

Figure 1. Structural duality Intervention Points

Empirical Evidence from Japanese economic development in the 1890s – 1960s

Fast and sustained economic growth is a fundamental requisite for poverty eradication and tackling of the problem of duality in economic structure. This is validated by Japanese economic development history, and recently that of China where approximately half a billion people have been lifted out of poverty, while many rural locations have been opened up for modern industrial and infrastructure development. However, specific macroeconomic policies and private sectors practices are equally important in meaningful implementation of anti-poverty measures and meaningfully tackling the problem of duality in economic structure. The role of private sector in economic and social development goals is indisputable, and therefore by extension the macro-level managerial practices and policies of corporations deserve scrutiny in economic development discourse. This is with regard to how macro-level private sector managerial practices may contribute to solving poverty, reducing income inequality, and even rural-urban income disparity based on usage and upgrading of factors of production. Valuable lessons abound in the Japanese post-war period marked by fast growth and distinctive corporate managerial practices rooted in the socio-economic context and dynamics of that time. The post-war period was marked by high rural-urban duality, high unemployment rates, while at the same time shortage of skilled workers prevailed (Nakamura and Odaka, 1999:56). The changes in duality in economic structure of Japan are presented in table 1, 2 and 3.

Table 1: Japan - Value of Product per Worker in Manufacturing and Agricultural Sectors

	Average Annual Growth Rate %		Duality Index for the Closing Year (%)
	Agriculture	Manufacturing	
1898- 1905	0.49	2.40	41.5
1905 - 1919	8.71	9.72	36.5
1919 - 1931	-2.07	3.62	27.9
1931 – 1938	7.94	6.84	22.4
1954 - 1961	8.21	10.02	30.4
1961 - 1964	11.28	8.89	37.0
1965 - 1968	20.02	10.90	47.8

Sources: Klein, L. and Okawa, K. (eds.). Economic Growth: The Japanese Experience Since The Meiji Era. Homewood, Illinois, Richard D. Irwin, Inc. for the Economic Growth Center, Yale University, 1968; Statistical Handbook of Japan, 1970, pp. 97-103; Japan Economic Yearbook, 1969, pp.5, 111, 214; Japan Economic Yearbook, 1966, p. 212.

It is notable that agriculture grew at a slower rate than manufacturing sectors for the period between 1898 and 1938, and thus the duality index worsened by this time. However, between 1950s and 1960s, Japan not only managed to solve the problem of duality between the sectors, but also created a situation where agricultural sector growth surpassed the manufacturing sector in 1968. Some caveat is necessary though regarding agricultural price distortion owing to importance of rural-agricultural voting constituency for the ruling Liberal Democratic Party of Japan at that time (Estevez-Abe, 2008; 54). Again it is valid to point out the importance of postwar land reforms in raising agricultural productivity based on elevated size of farm-owner-operators. In addition, double-income situation of most of the small-scale landholders also led to some distortions.

Table 2: Japan - Commodity Price Levels

	Average Annual Price Changes (%)		Terms of Trade for the Closing Year - P_1/P_2
	Agricultural products	Manufactured goods	(1934 – 1936 = 100)
1898 - 1905	1.37	2.60	106.0
1905 – 1919	6.72	6.84	107.1
1919 – 1931	- 2.58	- 2.06	89.1
1931 – 1938	7.14	3.91	93.0
1954 – 1961	4.53	-0.48	139.9
1961 – 1964	7.84	0.75	149.8
1965 - 1968	5.40	2.55	155.0

Source: Author calculations from Statistical Handbook of Japan, 1970, pp. 97-103; Japan Economic Yearbook, 1969, pp.5, 111, 214; Japan Economic Yearbook, 1966, p. 212.

Agricultural prices were on a downswing between1919 – 1931, a sharp contrast to prices for manufactured goods. Abnormally high prices during 1931 – 1938 were due to the war situation therefore the period deserves to be discounted in our analysis. However, agricultural goods prices started rising steadily from 1954 onwards and even surpassed the positive price changes for manufactured goods.

Table 3: Japan - Real Product Per worker

	Average Growth Rate of Real Product Per Worker V/L		Ratio for the two Sectors in the Closing Year
	Agriculture	Manufacturing	
1898 – 1905	- 0.88	- 0.20	50.7
1905 – 1919	1.99	2.88	44.8
1919 – 1931	0.51	5.68	25.7
1931 – 1938	0.80	2.93	22.8
1938 – 1954	- 0.14	- 1.52	28.1
1954 – 1961	3.61	10.51	27.8
1961 - 1964	3.44	8.14	23.2
1965 - 1968	14.62	8.35	30.9

Source: Author calculations from Statistical Handbook of Japan, 1970, pp. 97-103; Japan Economic Yearbook, 1969 pp.5, 111, 214; Japan Economic Yearbook, 1966, p. 212.

In the period of high economic growth, agriculture also recorded tremendous improvements in productivity, and it is therefore tenable to point out that an actual closing of the gap between income levels of rural and urban regions happened. It is notable that this happened within the context of land reforms and consolidation, increased investments in agricultural infrastructure such as irrigation systems, increased mechanization, and above all, high rate of sustained economic growth. Kuroyanagi (1982) provides an analysis of the dynamics of the agricultural sector transformation in terms of cause and effect framework of public policy, implementation and role of private sector. Thus land reform and consolidation led to incentives and opportunities for agricultural mechanization. However, government direct input in mechanization efforts was quite minimal. Instead, loans offered to private landowners as administered through financial institutions provided the funding needed to mechanize the farms leading to increased productivity.

Transformation of Vietnamese Economic Structure

Table 4: Vietnam - Percentage Changes in Agricultural Sector at the decade level

Indicator	Percentage Changes in Agricultural Sector (%)				
	1970-1979	1980-1989	1990-1999	2000-2009	2010-2013
Fertilizer consumption (kilograms per hectare of arable land)	-	-	-	-	8.31
Cereal yield (kg per hectare)	10.32	25.12	35.78	32.37	16.03
Agricultural machinery, (tractors per 100 sq. km of arable land)	33.86	37.48	225.81	79.09	-
Livestock production index (2004-2006 = 100)	6.20	77.49	65.41	101.28	43.34

Source: Author's calculations from World Bank Dataset

Table 4 presents the percentage change in Agricultural sector for each decade starting from 1960-2013. The fertilizer consumption increased by 8.31% in the period 2010-2013 as compared with the previous decade. The rise in fertilizer consumption is in tandem with strong rallying of agricultural commodity prices and governmental support policies giving farmers incentives to capture higher returns through increased production and higher yields. In terms of the cereal yield, the highest increase rate was recorded at 35.78% in the 1990s, followed by 32.37% in the 2000s. In addition, the agricultural machinery input has increased remarkably by 225.81% in the 1990s and 79.09% in the 2000s. Undoubtedly, the Doi Moi policy in 1986 targeting reform of the

economic system towards a market-oriented model has contributed to the augmentation of agricultural production by improving the efficiency of marketing sectors and enhancing greater autonomy for farmers in decision-making process and fundamental institutional changes including the reform of ownership regime (Tran and Kajisa, 2006). Within this context, prominent roles are played by the market reform, an increase in Total Factor Productivity (TFP) and the share of TFP growth due to incentive effects, indicating that more competitive markets and secure property rights issue are pivotal in the structural transformation process (Kompas, 2004). Moreover, the livestock production index has risen from 6.20% to 101.28% during the period 1970-1979 and 2000-2009, respectively in order to meet the domestic demand.

Table 5 - Percentage changes in manufacturing sector at the yearly level

Indicator	Percentage changes in manufacturing sector (%)				
	2009	2010	2011	2012	2013
Manufacturing sector:	21.01	30.72	25.65	21.81	22.84
Manufacture of food products	16.67	26.56	24.71	19.05	20.23
Manufacture of textiles	21.91	24.58	33.81	6.47	8.55
Manufacture of wearing apparel	15.16	30.89	22.16	14.08	18.54
Manufacture of chemicals and chemical products	31.70	8.17	20.74	18.47	17.35
Manufacture of rubber and plastics products	15.95	32.67	24.82	11.39	13.38
Manufacture of basic metals	2.50	50.12	13.28	31.60	26.93
Manufacture of computer, electronic and optical products	25.23	31.25	82.17	100.29	68.11

(Source: Author's calculations from Vietnam General Statistics Office (GSO)

Table 5 shows the changes in manufacturing sector and its top seven industries at the yearly level during the period from 2008 to 2013. This sector has expanded rapidly over the past years at an average annual rate of 24.41% with the highest rate of 30.72% in 2010 and the lowest rate of 21.01% in 2009. The highest share in the manufacturing sector is taken by food products, accounting for approximately 19.62% of total manufacturing output in 2013 (GSO, 2014). This industrial sector has experienced considerable growth with the annual growth rate of about 21.44%. In addition, the industrial sector has contributed to higher export revenue in trade between Vietnam and other countries. Also outstanding is Vietnam's textile sector, which has achieved a considerable growth in recent years, playing an important role in national socio-economic development and poverty reduction. However, this sector's annual growth rate is uneven. Specifically, it has increased rapidly at the rate of 33.81% in 2011, but much slower and erratically at the rate of 6.47% in 2012, and 8.55% in 2013. The repercussions of such erratic growth rate can be immense given the great number of people employed in this sector. Every year, this industry employs over 2.2 million people. Export value of textile products has been ranking one of the highest shares in the country's total export revenue. For instance, in 2013, Vietnam textile products have been exported to over 180 countries and territories with the export turnover of US$ 17.9 billion; accounting for 13.6% of total export turnover of Vietnam and 10.5% of the national GDP (Bui, 2014). Along with textile and apparel products, the electronics industry is also the major export sector of Vietnam in recent years with the high speed accessing new technologies; the participation of many multi-national electronics companies as well as the increase of domestic demand for electronic products and services. This industrial sector has expanded remarkably about 100.29% in 2012. According to data of 2012, there are over 500 firms with more than 200,000 direct employees with rather high income, and this number will perhaps continue rising in the coming years.

Despite the remarkable achievement of Vietnam in its efforts in economic transformation and growth, poverty and inequality, within regional, urban-rural dimensions, still remains a daunting challenge as evidenced by the World Bank's poverty assessment report (Badiani *et. al.*, 2012). Table 6 shows the regional economic development imbalance and a higher rate of poverty in rural areas as compared to urban zones. The report also highlighted inequality in infrastructure quality, reliability and levels between rural and urban region, which also triggers rural-urban migration of unskilled workers. We can then infer a low level of capital infusion in such rural zones, and by extension low levels of productivity.

Table 6: Poverty Estimates for 2010 by Region and Urban/Rural Areas

	GSO-WB Poverty Rate		Official Poverty Rate	
	Incidence (%)	Contribution to total (%)	Incidence (%)	Contribution to total (%)
All Vietnam (national)	20.7	100	14.2	100
Urban	6.0	9	6.9	14
Rural	27.0	91	17.4	86
Red River Delta (Hanoi)	11.4	12	8.4	13
East Northern Mountains	37.7	21	24.2	20
West Northern Mountains	60.1	9	39.4	9
North Central Coast	28.4	16	24.0	20
South Central Coast	18.1	7	16.9	10
Central Highlands	32.8	10	22.2	9
Southeast (HCMC)	8.6	7	3.4	4
Mekong Delta	18.7	17	12.6	17

Source: Badiani et.al (2012), Washington DC; World Bank
** General Statistics Office of Vietnam (GSO)

Discussion and Conclusion

It is vital to point out that Japanese post-war structural transformation happened within the specific context of sustained economic growth, macroeconomic stability and rise in productivity. Even though disparity in levels of productivity and incomes existed at the beginning of the transformation, a convergence happened, and later rural incomes exceeded urban income. We noted this catch-up in rural incomes with some caveat about distortions owing to political economy and double income factor. Nevertheless, our discussion focusing on lessons for Vietnam from the Japanese experience centers on macroeconomic and governmental policies targeting sustained economic growth, equity, and rise in productivity. We therefore, strongly argue that macroeconomic and governmental policies targeting the problem of duality in economic structure needs to be a pro-sustained-growth model premised on optimal allocation of resources to both urban and rural parts of the economy. Such macroeconomic policies have the positive outcome of facilitating the freeing of productivity-raising potential of both rural and urban sectors, while at the same time bringing positive social impact on rural urban migration. We note here that rural urban migration spawned by pervasively unequal development is a destabilizing phenomenon on both planning for provision of public urban facilities, while for rural sector, such migration is a drain on agricultural labor, and other potentially productive activities in the rural economic sectors.

While Vietnam has impressively managed to reduce poverty levels at the general level, similar to other developing countries, the disparity in incomes, and therefore levels of productivity between rural and urban sectors still persists (McMillan and Rodrick, 2011; Badiani *et. al.,* 2012). By extension, we can infer that it is not the level of migration of labor from rural agricultural zones to urban zone manufacturing and service sector employment that signifies structural change, but rather it is the convergence of agricultural and industrial activities or erasing of huge disparities in levels of productivity that matters. Therefore of utmost focus should be governmental policies and programs targeting increasing productivity in the rural agricultural sector.

Governmental role in equitable development and expansion of infrastructure and policies giving incentives for capital inputs in agriculture is another lesson from the Japanese economic development

experience. In this instance, policies targeted at agricultural mechanization, competitive pricing of agricultural commodities proved critical to rise in productivity within the Japanese rural-agricultural sector. With an equally if not closely productive rural sector, it would be possible for Vietnam to have a flexible labor market in which even some urban dwellers might willingly move to the rural sector as agricultural labor, more so as part of agri-business. As in the case of Japan, tackling the problem of duality may engender competition in the Vietnamese economy through competitive pricing of agricultural products in urban sectors. However, Ravallion (2008) notes increased landlessness following land reforms in Vietnam, therefore we point out that such reforms need to provide incentives to attracting investments geared towards increased agricultural productivity and the creation of a supportive economic ecosystem with financing and marketing mechanisms. It is notable that in the case of post-war Japan, while the government policy directly facilitated land ownership and creation of irrigation and other vital infrastructure, the funding of mechanization remained a private sector effort. In the case of Vietnam, improved access to land needs to be accompanied by incentives to private efforts in funding agricultural inputs and farm mechanization efforts. In conclusion, a concerted effort involving pro-growth macroeconomic policies aimed at increasing productivity and eventually narrowing gaps between rural and urban sectors is what can deliver equity in Vietnamese economic development process.

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