

Understanding History with Business Model

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Abstract: Total capital of royal family and nobles in West Europe during 15th to 16th century was far greater than middle class had. However, this situation completely opposite after 18th century. How was happen? This paper aim to exploring what makes this shift and how it happened. Since adaptation of System Dynamics to history is one of law adaptation area and mainly focus on K-12 as well as focus to qualitative model. One of reason on this few adaptations may come from not establishing reliable

methods and standard approach for building model of history. I suggest to using business model to understand driver of power shift in the history, and show it is useful to explain power shift from royal and noble to middle class that happen in 17th century, as example. This is second paper following first paper explain history using System Dynamics regarding Swahili Coast, East Africa for second Asian Pacific SD Conference in Singapore in 2016.

1. Introduction

1-1. Theories explain mechanism of changing history

There are two major theories explain mechanism of changing history. Karl Marx (1844) looks social structure with two layers, socio-political structure as upper layer, and economic system as bottom layer. He explains change of lower layer (economic system) forces to change structure of upper layer (socio-political system). And this phenomenon described as change of history, according with his theory. For example, plague or back death in 14th century reduced tremendous number of famers. With this situation, nobles could not maintain old system of collecting free labor from farmers in their territory anymore in West Europe. With reason of short hand, farmers in the territory refuses to provide free labor work for nobles or insists to pay wages. Nobles have no way but keep paying wage for labor to farmers for maintaining high society life style, otherwise immigrate to urban area and gradually dropping social status to middle class. They could no longer keep position of ruler. This change gradually shifting economic power to middle class and famers, and empowered middleclass establishing democracy (Hasegawa et al. 1997).

While Max Weber (1904) explains change of history as vice versa. He explains changing of socio-political system may force to change economic structure. For example, work hard to save money for his family is belief and behavior of Protestant Christian in West Europe in 16th century. But money saved by these Protestant civilians utilized as capital when Dutch East Indian Company established, and this become powerful financial driver to provide enormous sea power of Holland. Weber insists social behavior of Protestant drives to create modern corporate system and change history. This mechanism also establishing new type of colonization in 17th century (Hasegawa et al. 1997). These are major two theories explain mechanism of changing history.

1-2. Literature review

Application of SD: System Dynamics to history mainly focus on K-12, and almost all of them are qualitative model. These models including Civil War of USA and French Revolution. Main objective of these models are for teaching structure of tension and conflict between powers, such as those during French Revolution or Civil War of USA. However, these models looked not much focus on what cause such tension and what may possibly happen if situation and condition may different. French Revolution type civil war emerged so many times in the history, and some were success while others fail. Or, we can list so many unsuccess attempt of revolution both in Europe and Asia rather than success one. Simply success one recorded as history and unsuccess one fade away from history. As my opinion, these model does not explain how structure of society changing according with theory, for example by Marx or Weber.

I find two quantitative SD models that explain change of history. Hosler et al. (1977) explains rise and fall of ancient Maya civilization and Sterman (1985) explains how belief of scientific truth would changing according with theory of Thomas Kuhn. These models explain change of history with single structure model. But Suetake (2013, 2015 and 2017) explains history with evolving model, that add or remove feedback to show structure change of model. I this approach, history can be explained with emerging new feedback loop and shifting main loop to this new feedback. This may one of useful approach to explain changing of history.

2. Approach

My suggestion is we can look and understating history using business model, like competition of modern company or organization in the market. We can look country of hegemony in the history as leading firm of the market and analyze what makes their success. In management science, we analyze what is success business

model and what is key elements of that model. Then using this model, we try to understand what is missing for unsuccessful company. Also, we know successful business model evolving by time. For example, successful business model in 1960s is no more effective after globalization of 1990s. Therefore, former leading company sometimes fail to adapt to new business model and drop from hegemony (leader) of the market. This concept in management science is quite common. Therefore, if we can apply this approach for building model of history, it makes easier to build model, as well as we may feel familiar to this approach. In this paper, I suggest this approach may be effective to build model of history, and show example of model to explain how and what change history during 15th to 19th century in Western Europe. Actually, the model itself is basically same one I already presented during second Asian-Pacific SD Conference in Singapore, 2016. That paper explains evolving model approach could make possible to build model of history. However, I only show simulation results about Africa. In this paper, I show simulation results about Europe.

3. Models

3-1 Qualitative model

Business model should incorporate key success factors and its linkage. In Resource Based View, key success factors may (A) capital, (B) products, and (C) market. Capital means volume and methods to utilize financial resources. Products including find or develop new products, purchase or produce, and distributing to market. Market including consumer. Business model shows linkage of these three factors.

With this concept of business model, I explain evolution of colonial model. First colonial model people in 14th to 16th century in West Europe find it works, (A) regarding capital, get finance from royal family, and (B) regarding products, import value items from Middle East (and Asia), and (C) regarding market, sell value items to rich royal family, noble and rich merchants in Europe. Royal family including Spain and Portuguese whom had huge capital. These royal families provide capital for built ships of trade as well as exclusive trade right to selected rich merchants. These selected rich merchants who strongly tie with royal family voyage to Asia (including Middle East and India), purchase spice and other valuable products called value items.

Value items mean goods that could be expected high profitability with small quantity. Since price of those items are so expensive, consumer was limited in other royal family in Europe, rich noble and very rich merchants. This value item including jewelry, expensive furniture using ivory, gold and silver for decoration. In 14th to 16th century, this also including sugar, spice and coffee, all imported from Middle East and then from Asia. Sugar and spice are commodity presently, but these were precious medicine and so expensive until 18th century. These imported items sold in European market, and its center located in Flanders.

Opposite term is bulk item, that less profitable but commodity. This bulk item including daily consumed item of people in those days such as wood, wheat, fur, salted herring and wine, all produced in Europe. Since its low profitability, merchant need to sell huge volume to earn certain profit, however, they can find consumer rather easily. Also, center of trading for these bulk items located in Flanders.

This business model provide success to Spain and Portuguese, however, regarding (A) capital, resources was limited by royal family, and regarding (B) products, merchant and sponsor had quite faint idea on developing new products, as well as regarding (C) market, customer is limited for other European royal family, nobles and very rich merchants. Exclusive trade right guarantees profit for royal tied merchant, however, this makes more concentrating to these three limitations. They focus more and more to find and purchase value item while this business model does not effective anymore. I call this type colonial model as merchant style. Even they built fort but simply protect their trade center in foreign country and they only have interest to trade, to purchase value item. They never consider to producing products in their colonial territory. Only they have interest to collect tax from people live there regarding establish colonial territory.

Second colonial model emerged in 17th century, however original idea already emerged in 14th century in Europe. This one tries to develop products producing in colonial land, first sugar, then expands to coffee, tobacco, tea, cotton and jute. This means this model strengthening (B) products of the business model.

Origin of this model has two origins. First one is establishing northern part of Europe. Adventure mind Italian merchant develop bulk item and its production system such as salt and salted herring, wine and wheat and trade in Europe. This system drives growth of Northern European commodity market centered in Flanders, quite rapidly during 15th to 16th century. Some nobles involving but majority of capital provider is rich merchants. However, still total capital of royal family is far greater than total capital of those merchants and civilians, according Hasegawa et al (1997).

Second source is plantation farm model first developed by Arabic during middle age for sugar plantation. Crusader learn from Arabic and adapt their colonial territory in Mediterranean. Then Portuguese inherit and adapt first in Azores Island, and then carry on in Guinea, but Spanish expands wide scale in their territory of Carib Islands and south America. They produce sugar in their colonial territory, then directly shipping to European market in Flanders, because market in Portugal and Spain are limited specially value item. I called this type colonial model as primitive plantation firm style. They intend to produce value item but not intend to produce commodity, as well as never intend to produce raw material.

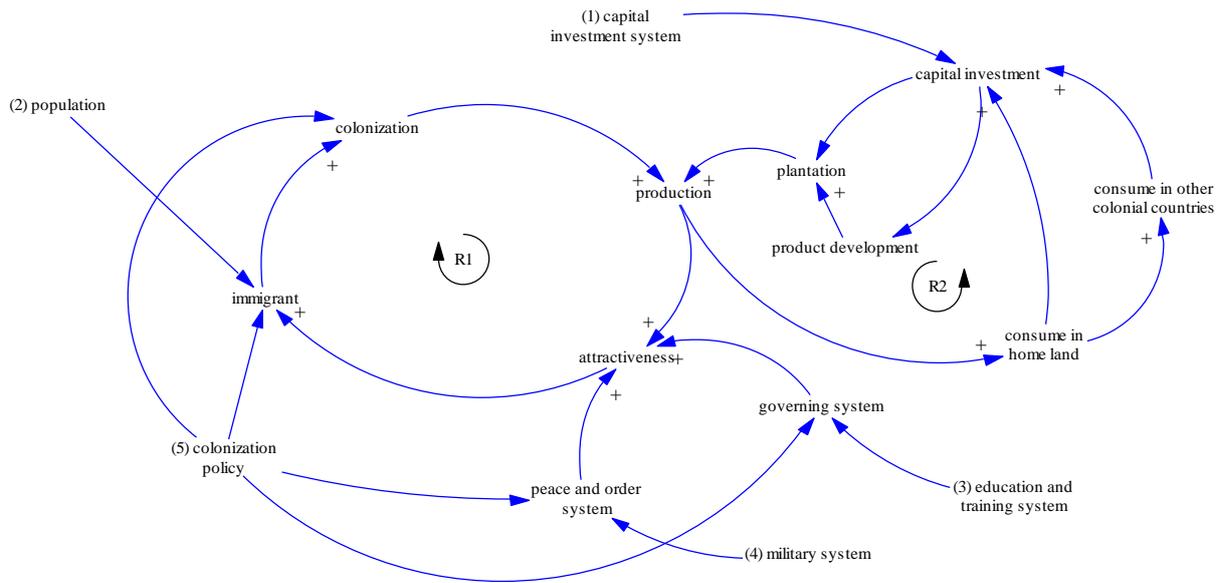


Figure 1: colonialization business model (note-2)

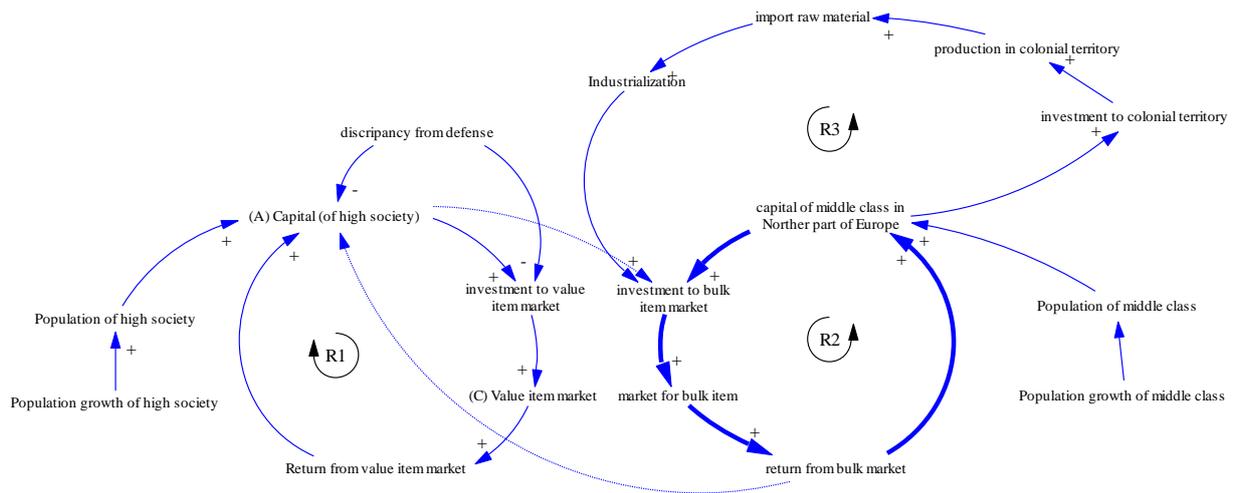


Figure 2: qualitative sub system for investors and market (note-2)

Third generation colonialization model invented by Dutch and intake by British. According with Weber (1904), people lives in Protestant Christian area believes hard working and saving money for their family is behavior of virtue. This saving money of citizen utilized as capital of company when modern corporate system invented in 1603 in Holland. They utilize that capital gather from citizens for building ship to trade. Then citizen immigrate to colonial land for operate plantation farm using slave as cheap labor, as well as develop many kinds of products, not only sugar, but also tobacco, cotton, jute, coffee tea and cocoa. Since increasing rich middle class, as well as this system also increasing production volume and trade volume, previous value item shifting to commodity, even normal citizen can purchase and consume. Key success factor of this model is, regarding (A), success to collect capital widely from middle class, and regarding (B)

products, further increasing production volume and turn to commodity, and regarding (C), further expanding market size to normal middleclass customer. Added more, increasing production volume of item drives shifting some value item to bulk item as well as driving product item to more raw material, when industrialization start.

Figure 1 shows this third stage colonialization model. This model shows key success factors are, (1) investor of home country who invest plantation farming in colonial land, and (2) population of home country who immigrate to colonial territory for develop and operate plantation firming, (3) education to guarantee quality of colonial government staff, (4) military for guarantee peace and order in colonial territory, and (5) colonialization policy itself.

Figure 2 shows detail of (1) capital investment system on Figure 1. More precisely, sub system of quantitative colonial model that show relation of investor and their investment in home country. Original Quantitative model incorporates 3 subsystems, subsystem-1 explain structure of investors and market in home country, subsystem-2

explain plantation firming for production and production development in colonial territory, and subsystem-3 explain immigrants and colonial governance to enhance white immigrant and protect their right. Figure 2 shows this first subsystem of model qualitatively and Figure 3 shows quantitatively. (note-1)

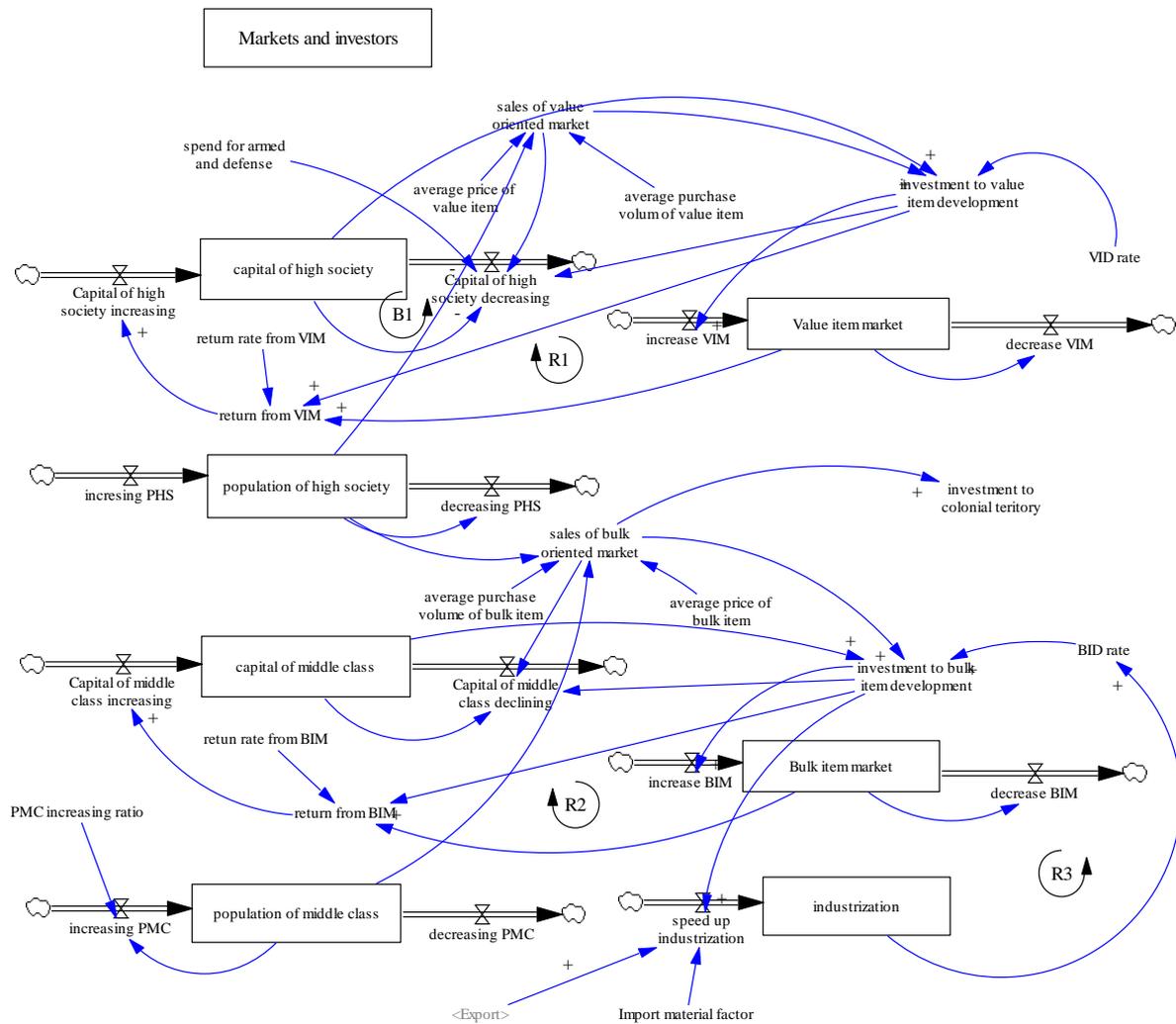


Figure 3: sub system of investor and market (note-2)

Figure-3 represent R1 and R2 feedback loop on Figure-2. Part of R3 on Figure-2 (regarding investing to colony) hide from Figure-3, as other sub system (note-1). Basically, enforcing loop R1 and R2+R3 on Figure-2 compete each other. Even efficiency of R1 looked far better than R2, however, enforcement pull down by balancing loop B1, while competitor R2 enforced farther by support of other enforcing loop R3. Therefore, in term of model structure, this paper simply discusses about competition between R1 and R2+R3 on model of Figure-3.

3-2 Quantitative model

Value item and its market, investor:

In this sub system, there are three feedbacks. First one (R1 on Figure 2 and 3) is reinforcement feedback representing investment of royal family and noble, so called high society those interest focus to value item. This market of value item represents stock of “value item market” that influenced by investor who has interest to value item market. These investors represented stock of “population of high society” and capital of these investor represented by stock of “capital of high society”. So, they invest their capital to “value item market”, and get return, and that return makes further increasing their capital. Since value item is quite profitable, their return is quite high, and this high return provide their capital exponential growing, theoretically. This could be their power resources and

strengthening their authority of ruling people, in term of capability to pay cost for maintaining military and police system. However, problem is, this reinforcing loop does not always work, by interruption for spending defense and arm race. This spending for defense were so huge and many kings bankrupt when they lost war. This interruption slowing expansion of this market. Also, these value items are so expensive, and consumer is quite limited in high society. Therefore, investment of high society to value item market has strong nature of reinforcement feedback loop, however, growth of the market is slow.

Bulk item and its market, investor:

On the other hand, there is also certain scale of bulk item market already established in 15th century in Flanders and London in 17th century. This market represented by stock of “bulk item market”. This market increased by investor of both rich high society and middle class. Capital of middleclass population represented by stock of “capital of middle class”. Second feedback (R2 on Figure 2 and 3) represented by investment of middle class. Return of their investment to bulk item market is less profitable, however, investment is not interrupted, as well as growth of market is steady and unlimited.

Secondly, population support two stocks of capital are different. Population of high society is very few, while population of middle class is more, and growth rate of population also differ. Although capital of high society is bigger than capital of middle class when simulation start, but difference of investor’s population growth makes different results of two capitals.

Industrialization:

Thirdly, in 18th century, industrialization accelerating to increasing bulk item market. This movement of industrialization increasing investment to plantation firm and increasing import raw material (export to homeland from colonial territory in Figure 2) and accelerating stock of industrialization. This stock means weight of investment to bulk item market. Added more, while some value item shifting to bulk item market, such as sugar and spice, stock of bulk market increasing more and more. So, with two reasons, (1) reinforcement loop of increasing population of middle class that increase capital of middle class, and this increasing further investment to bulk item market and (2) reinforcement loop of industrialization that increasing investment to colonial territory and growing production of raw material, and that export further increasing bulk item market, both stocks increasing exponential. This is third but most strong reinforcement loop (R3 on Figure 2 and 3) connecting stock of “industrialization” and “bulk item market”. It is not shown on this paper, but this feedback of industrialization enforced though another sub system represent investment to plantation firming in colonial territory and import raw material (export on Figure 3) from colonial territory.

Main feedback loop during 14th to 16th century is R1 on Figure 2 and 3, but interruption and limitation of market

size makes difficult to grow rapidly on this R1 feedback loop. For a meanwhile, capitalization by stock company system makes possible to shift main loop from R1 to R2, after 17th century, and also this change of main loop cause change of history from Spanish hegemony to Dutch and British Sea Power Hegemony. Industrialization represent R3 enforce this movement and establishing colonialism leaded by British after 18th century. That how I explain European history during 14th century to 19th century using flamework of business model.

4. Simulation

4-1 Parameters and model validation

Exact figure of total capitals on high society (royal family and nobles) and middle class in 16th to 17th century is unknown, however, based on Hasegawa et al. (1997), I assume 5,000 and 1 as initial value, accordingly. It could be 10,000 to 1. Also it is so difficult to set average price. I assume average price of value item and bulk item as 1,000 to 1, though it would be more than 10,000 to 1. This model use unit of trade amount and capital as 1NV, that equivalent with annual trade amount for average rich class merchant or typical noble class in 16th century. I assumed this value does not influenced by inflation or deflation. Average price also related with average sales quantity. I assume average sales quantity of value item and bulk item as 0.001 to 100. But behavior pattern does not change by difference of value. Since it may no sense to convert currency value, these capital and price use nemo (unitless) currency value. It may possible to convert to US dollar value, however, only I need approximately ratio of capital between high society and middle class. Also, I omit total capital of low class. It can be divided society as high class, middle class and low class, but total capital of low class until 16th century may ignorable. Same for price and sales quantity. Price has nemo currency and quantity is nemo unit.

Since lack of reliable data on capital, average price and average procurement quantity, I do model behavior test for confirm parameter value but not check quantity with historical data.

4-2 Simulation results

Figure 4 shows simulation results to show how economic power shifting from high society to middle class through 17th century to 19th century. Since population of high society is not change rapidly, actually decrease slowly, while middle class population growing rapidly, specially effect of industrialization become obviously after 18th century (Figure 4-A). In this model, I accept idea of very primitive industrialization starts from Renaissance (Kabayama 1996 and Hasegawa et al. 1997). This rapid exponential growth of middleclass population is one of engine to achieve growth of bulk item market.

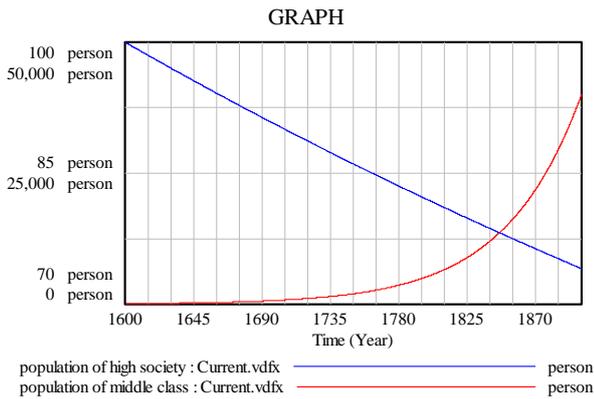


Figure 4-A: Investor population of high society and middle class

Figure 4-B shows growth of value item market and bulk item market. Since interruption of investment to this market by high society member cause reduction, while market of bulk item growing exponentially. There are two reason of this exponential growth. First one is, no investment interruption from middle class. Their investment is continuous and steady. Second reason is population of middle class, this is source of investor, also growing exponential. And this increasing of investor changes total return from the market. Therefore, growth of bulk item market supported by these two exponential growths.

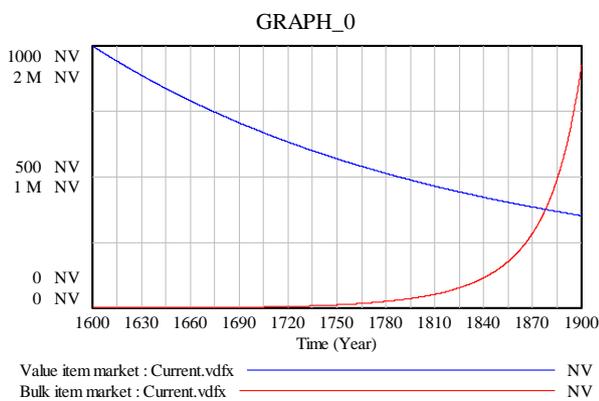


Figure 4-B: Comparison of two markets

Figure 4-C, comparison of two returns clearly shows difference. There is huge gap between two profitability. However, size of market makes huge total return from bulk item market, while limited size of value item market also limiting total return from value item market. This gap wider by difference of total return that is source of re-investment.

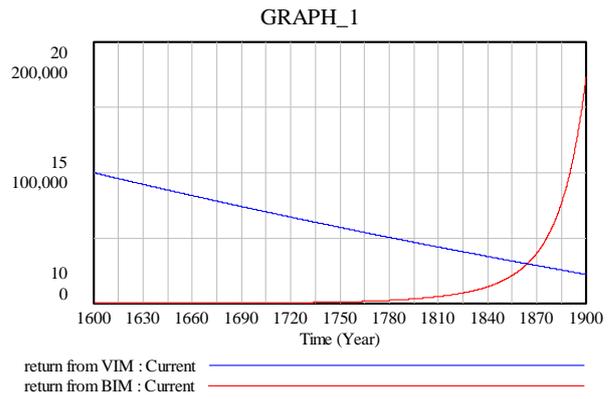


Figure 4-C: Return from market

Figure 4-D shows behavior of total capitals. Capital of high society interrupted for spending defense and unsuccessful to accumulating. Actually, many kings and nobles bankrupted mostly for war. For example, king of Spain has huge revenue, from his territory of Flanders, South Italy, Spain, and America. Specially silvers bring from Mexico supplies triple to 5 times volume of silver total Europe has before 16th century (Hasegawa et al. 1997). Even king of Spain has so huge revenue, however, he spends more than his revenue for anti-independent war to Holland, defense war against Osman Turk that invading to Vienna, war with French and war with England, as well as 30 years war exhaust his wealth. He bankrupts several times, and that leading fall of Spanish empire (Hasegawa et al. 1997). But capital of middle class growing exponentially and gap become around 400 to 1 in 19th century, even initial gap is 10,000 to 1.

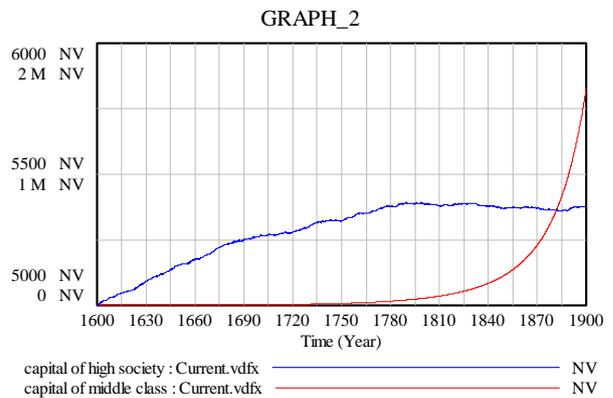


Figure 4-D: Comparison of capitals

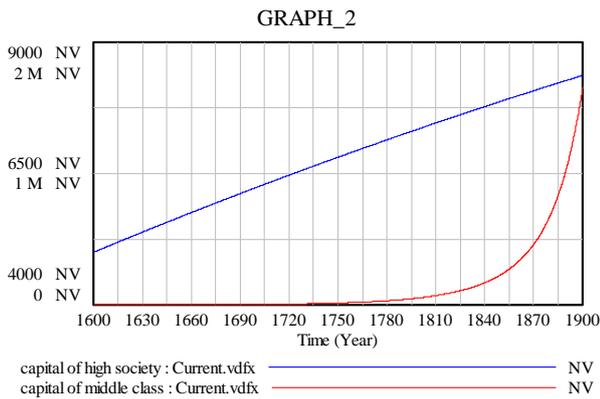


Figure 4-E: Case of peaceful situation

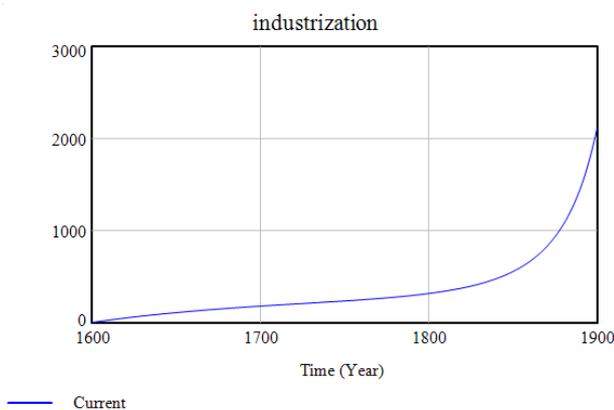


Figure 4-F: Impact of industrialization

So, what if Europe of high society did not necessary to spend their wealth for warfare? Figure-4E shows the result. This experience shows, also capital of high society keeps growing, although not exponentially. However, gap become narrow to 200 to 1. Therefore, even there is no interruption to their investment, however, value item market is basically niche market their sized is limited.

Lastly, Figure 4-F shows influence of industrialization. Influence is so faint during 17th century. Stage is still so primitive, and products export to Europe is mainly limited in sugar. However, after European countries establish governance system in colonial territory, that provide enormous influence, specially capital accumulation of middle class investor and growth of bulk item market.

5. Conclusion

This paper suggests concept to think model of history based on business model. Since business model including economic system, this history model supported by Karl Marx's theory of history that change economic system force to changing socio-political system. However, it may also possible to show change of social system and behavior of people force to shifting another business model, suggested by Max Weber.

This idea of using business model for model of history may makes easy to build SD model, as well as model builder could have much familiar sense to his model.

For confirming this idea may work, I show model of colonialization during 17th to 19th century in Europe based on the business model. This business model links three major resources, capital, market and product. Some SD practitioner may familiar to describe as concept of supply and demand regarding business model. But explain with these three factors may makes more sense of business model. Based on this concept, I show sub system of the colonialization model and explain how behavior of investor in home land change their market. This change cause fall of high society (royal family and nobles) and rise of middle class.

But in my experience, history class does not explain mechanism of power shift from high society to middle class quantitatively. Or rather, teacher of history class explains tension between two powers, high society vis middle class. Instead, reality may utilization of capital gather from middle class was key to success for third stage colonial business model and actually shift of economic power goes under socio-political structure gradually with this business model.

As this paper shown, we can explain history as mechanism of changing economic system quantitatively, and adapting business model may make much easy to build this type of history model.

Notes:

- 1) Whole sub systems of this quantitative model described in Suetake (2017).
- 2) For avoid complexity, these models show only important polarities and major feedback loops.

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